The Builder.

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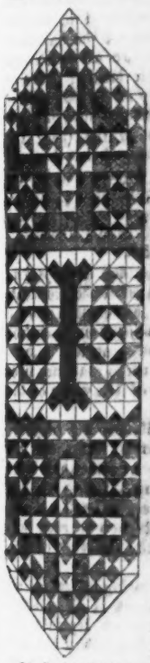
Magna Græcia.



IT would seem almost incredible, indeed the statement would scarcely be believed were it not supported by learned authority, that there should be known to exist in Italy a second and even more interesting "Pompeii." The excavations that were pursued in the cities at the foot of Vesuvius on their discovery in the last century soon revealed to the archæological world the fact that Pompeii was but a city of secondary, or even third rate, importance; but we have now a promise held out of seeing unearthed, after a slumber of twenty-three centuries, another famous city of antiquity. A competent French archæologist, M. Lenormant, has announced that we have it in our power to bring to light at any moment in Southern Italy, in Magna Græcia, a Greek colony of the eighth century before Christ, no other than the city of Sybaris, the home of those luxurious voluptuaries the Sybarites, of whom the few know so much and the many even are not altogether ignorant. The conditions under which the city perished in the sixth century before the Christian era were as striking,—though differing in cause,—as were those by which the cities at the foot of Vesuvius were destroyed; washed away by the river Crathis, along which the city extended over six miles, Sybaris now lies buried under fathoms of mud. The results of the excavation of the plain at the mouth of the river would reveal to us (we have the assurance of M. Lenormant, in the work he has recently published on Magna Græcia) another and even more interesting Pompeii, one of the wealthiest cities of antiquity belonging to a period stretching from the eighth to the sixth century B.C.

"A whole civilisation," writes M. Lenormant, "still imperfectly known, will be evoked from these ruins by a resurrection which will show us antiquity at the very point at which it had attained its highest degree of development, and that, too, without the smallest admixture of later ages: we shall see the picture of Greek culture at a moment when it assumes a special interest." Architecturally, also, the researches would be most important. "Let us remember that the temples of Pæstum are among the most justly admired types of Greek architecture, but, what is most curious, these temples belonged alone to a secondary city, a colony of Sybaris, and the finest of all were erected at a time when Posidonia received its artists from the mother-city. What must be the works of the metropolis? There are certainly, under the mud of Sybaris, temples as gigantic as those of Selinonte, which lie overthrown, but without a single stone having ever been removed." Supported by such authority, here is a promise which, even with the recent discoveries of Di Cesnola and Schliemann fresh in our memories, is calculated to interest to the highest pitch a large section of the archæological and artistic world. What might not come to reward the excavators in this untouched classic mine so strangely preserved? The difficulties accompanying the excavations have so far, it is to be presumed, deterred any action being taken. Steam power and large funds would be requisite to raise from its mud the buried Sybaris.

At this gloomy season of the year, when the worst efforts of our island climate are united in our great towns with the unabated endeavours of thousands of householders to aid King Fog, there are not a few who, some obligatorily, some advisedly, leave home for the sunny South. Southern Europe is already invaded by these privileged exiles, crowding from Russia, from Scandinavia, from France, from America, and from England; but it is in the familiar spots they each and all congregate. It is along the now villa-thronged Riviera, it is in picturesque Algiers, it is in artistic Florence and social Rome, and where not? How many strike out in new directions? Though Italy has been for centuries a favourite winter residence, indeed, a perpetual home for wanderers from all nations, there are portions of the peninsula which are still practically unvisited by the traveller. It is not its remoteness, it is its evil reputation that has probably prevented the southern extremity of Italy from becoming better known. The legends of the brigands who haunt the fastnesses of the district of Calabria,—which has obligingly supplied the artists with those picturesque models so incorrectly known as Roman peasants,—have perhaps affected, from time to time, too dramatic a reality for even the most romantically-disposed to venture into a country to which the best guide-books devote but a few pages. But ours is the age of illusions dispelled; travellers' tales are in these days discredited or exposed. The brigand-haunted Calabria has been recently invaded by a party, consisting of a gentleman, his wife, and daughter, who have returned to tell us their adventures.

The name of M. Lenormant, the distinguished French archæologist, is familiar to English readers, if only through the pages of one of our artistic contemporaries, to which he has often contributed his interesting communications. M. Lenormant visited, not long since, as we have stated, with his wife and daughter, the southern extremity of Italy, classically known as Magna Græcia, and the result of this tour we have in two volumes, which supply a great deal of previously unknown information of a portion of Italy too long unjustly overlooked ("La Grande Grèce: Paysages et Histoire."). The qualifications of the writer for his task, it may be briefly premised, are not alone those which belong to the archæologist; with that delightful power which French *savants* possess, in common with our scientific writers, of rendering even the driest of subjects attractive, these volumes will be found to deal not alone with the past, but to describe an amply sufficient number of little travelling incidents to render the work attractive to the general reader.

The school-boy, who since Macaulay's almost trite reference to his supposed stock of information has been taken as the average judge in most matters historical, will readily tell any one who asks him how it came about that the southern portion of Italy is known classically as Magna Græcia, formed of a number of colonists from the mother country of Greece. The history of the southern toe and instep of the Italian boot is but a chapter of the story of the great Greek people; but of the existence of these colonies it requires the archæologists to tell us; ravaged by Greeks, by Carthaginians, Romans, Vandals, Lombards, Normans, Saracens, Germans, Spaniards, and French, the lover of antiquity will be sorely disappointed should he expect to find any standing relics of the once-famed cities of Magna Græcia. But here, separated from home but by a narrow strip of sea, in a climate almost exactly resembling their own, the Greek emigrants, eight centuries before the Christian era, settled and prospered, their first great work consisting in rendering healthy and fertile, by a system of drainage, the marshy alluvial plains on the sea-board; and the land thus rendered productive, there soon sprang up the great cities of Magna Græcia, of which the Classic writers have spoken in such terms of admiration.

Centuries pass away, Magna Græcia is conquered by the Romans and Romanised; more generations, and the country is in possession of the armies of the Lower Empire; Southern Italy is again thoroughly Greek in spirit and in language.* In this fact an interesting problem presents itself. How comes it that so powerful an influence should have been worked, and at a distance, by a Government which, like that of Byzantium, at all times has been painted as of the extremest debility? It would seem that the weakness of the Lower Empire has been exaggerated, under the double influence of Roman Catholic prejudice, always opposed to the separated Greek Church, and the philosophic prejudice of the last century, unwilling to picture a Christian empire ruled almost exclusively by ecclesiastics. We owe it to the recent researches of ardent Hellenists that this view has been proved to be incorrect;

* Not the language of Plato and Herodotus, but a language much resembling modern Romaic.

the Greeks of the Middle Ages, so sadly vilified, we must thank for having served during nine centuries as a bulwark against the Slave and the Musulmans, and, never let it be forgotten, that Constantinople in the twilight of the Middle Ages served as the centre of arts and refinement, influencing by its artists and its students our still befogged West. It is not, therefore, very astonishing that in the ninth century this empire should have had the power to conquer, not alone by its arms but by its civilisation, the south of Italy, where still lingered so many memories of the common mother-country. Now, however, the traces of this earlier civilisation barely remain. M. Lenormant, armed with an intimate literary and archæological acquaintance with his subject, has sought out these traces, but hopelessly; the search suggests, however, many romantic comparisons, supported by poetic quotations.

To the past of this once fertile district is attached the warmest interest; of its future there are not wanting many hints; the land possesses essentially "capabilities," but the energy which drained the marshes during the Greek days must again be shown. With the turbulent Middle Ages the inhabitants fled to the mountains, neglecting the fertile plain, over which soon spread again the dreaded *malaria*;* this once more must be driven out, and plenty and prosperity may smile again over a land once wealthy, and famed for its commercial industry, its refinement, its literature, and its art.

IMPORTANT RESULTS OF EXPERIMENTS IN CEMENT AND IN MORTAR.

An instructive discussion, the report of which, together with that of the communications on which it was based, fills 180 pages of the sixty-second volume of the Minutes of Proceedings, took place on the 11th of May, 1880, at the Institution of Civil Engineers. The subject was the manufacture, mode of testing, and qualities of Portland cement. Major-General Scott, R.E., Mr. Bernays, and Mr. J. Grant contributed papers; and the subject was illustrated in great detail and with admirable patience.

Among those gentlemen who brought both practical and theoretical knowledge to bear on the subjects discussed was Mr. H. Faija, some of whose remarks on the subject of the determination of the specific gravity of cement were novel and important. Mr. Faija was, at the time, on the point of commencing a series of experiments, having for their object to determine the behaviour of cement when gauged with sea water, and afterwards placed in sea water. The results of these experiments he has, within the last few days, communicated to the Institution.

For the details of the experiments and the tabular form in which the results are displayed, we cannot be expected to find room, and must refer our readers to the next volume of the number of the Minutes of Proceedings of the Institution, when published. But the general outcome is of too much importance to be passed over in silence. It is to the effect that although the use of sea-water for gauging seems to retard the setting or hardening of cement, it eventually gives it greater strength than it attains when gauged with fresh water. This is on the condition of the compared samples being exposed permanently to the air. The reverse appears to be the case with regard to cement which is intended to set and harden under water. In that case samples gauged with fresh water show a decided superiority in strength compared to samples gauged with sea-water. It is thence deduced that the salts contained in sea-water have a damaging effect on cement gauged with sea-water, and afterwards immersed in water, whether salt or fresh. On the contrary, they have a beneficial effect, if introduced into the cement by the means of gauging with sea-water, if the cement be allowed to dry and harden in the air.

The practical conclusion is brief and plain. For all marine structures, those portions of the work which are below high-water level should be set in cement gauged with fresh water, while all portions of the work which are above high-water mark should be built with cement gauged with sea-water.

We take the occasion of a case in which the results of the inquiries set on foot by the Institution of Civil Engineers are of so much practical value to the architect, to make the suggestion that even more important results may be expected to ensue if either the Institution of Civil Engineers or the Royal Institute of British Architects would invite contributions on the difference in the method of treating lime for building purposes pursued in England and in Italy. We have more than once referred to this subject. Familiar with both methods, we are able to speak practically both as to their diametric opposition, and also as to the greater excellence of the Italian mode, as now practised in Italy. Nor do we believe that the difference has any thing to do with the difference of lime. Between English mortar made from burnt chalk, and that made from the boulders cast up by the sea on the Welsh coast, and known as Aberthaw lime, there is as great a difference as can be found between almost any samples of English and of Italian lime. Again, when we look at the flat tile-shaped brickwork which, when found in England, asserts its Roman workmanship, or even at the tenaciousness of the unroofed walls of some of the ancient priories or chantries disestablished by Henry VIII., and contrast the petrified durability of the Pagan or monkish plaster with the condition to which that in a newly-built and uninhabited house so notoriously soon returns, we have, at all events, a strong inducement for investigation of the two methods. The modern English plan, we suppose almost universally adopted, certainly insisted on with great force in many important specifications, is to use the lime hot from the slaking. Lime slaked and not used within the day is ordered to be removed from the works as rubbish. But the Italian builder would retort the epithet on the freshly-slaked lime; and long attention to building in Italy leads the present writer to the conclusion that the Italian method is the true one. Our inability to obtain true fresco work in England is due, in our opinion, neither to climate nor to the chemical character of the lime, but to hasty use after slaking. In Italy the first proceeding of the builder is to dig a pit for the lime to be used in the building; it is thrown in and covered with water, and if so prepared for a couple of years before it is used, so much the better,—at least in the opinion of the Italian architect.

Here is a matter of practice of the utmost importance, in which the practice of the master builders of the world,—our own masters,—is diametrically opposed to that now prevalent among us. More than that, the results of the Italian practice are vastly superior to those of our own. It is a matter that affects the stability and the dryness of every house to be built, from the cottage to the palace. Is it not, then, a subject on which it will well become the great consultative institutions connected with the building trades to set on foot adequate inquiries?

THE GERMAN PARLIAMENT HOUSE.

The Commission for superintending the erection of the House of the German Imperial Parliament or Reichstag has decided to open a new competition for the final plan for the new structure. Unfortunately, it appears from the official press that foreigners are hardly likely to be invited to enter in this contest. A semi-official notice in the organ of the Board of Works in Berlin intimates that all German architects will be eligible to compete, and even hints that the privilege will be likewise extended to the architects of the German-speaking provinces of Austria and the German Cantons of Switzerland. The official invitation to this competition has, however, not yet been published, and the question whether foreign architects are to be excluded will remain undecided until the terms of the competition are officially made known.

The above-mentioned Commission has drawn up a preliminary report and programme in reference to the details of the interior of the new House. The document contains some particulars of general interest. The site finally decided upon is described as a rectangle of 136 mètres in length, by 95 mètres in breadth. The *niveau* is practically level throughout. The Commission has determined that the border lines of the site must not, under any circumstances, be touched by flights of steps, outbuildings, entrance-halls, or the like.

A. The principal apartment which is to be provided in the new House is the Chamber of Session or Hall of Assembly. The area of this hall is to be from 600 to 640 square mètres. The hall is to be accessible by doors conveniently placed, and is to be surrounded by a broad light corridor. All the entrances are to be protected from draughts. The deputies are to have entrances separate from those for the members of the Federal Council. Two of the deputies' entrances are to be for the purpose of divisions, and must be arranged so that the one stands opposite to the other. With regard to the interior arrangements of the Hall of Assembly most importance is attached:—1. To the production of good acoustic effects. Hence care is to be taken that the hall be not too high nor the curves or arches too deep. 2. In the next place, attention must be paid to the heating, ventilation, and lighting, so that the temperature of the hall may be equable.

The Hall of Assembly is to include the following features:—

1. The seats are to accommodate 400 deputies, and are to be arranged in amphitheatrical form. The gradient of the hall floor is to be 1 in 10. The seats are all to be supplied with backs, and with locking desks in front. They are to be easy of access, and for this purpose there are to be passages or gangways radiating from the centre (near the President's seat), and so arranged that there are not to be more than four deputies' seats in a line between each two neighbouring gangways. Each seat, with its corresponding desk, must not occupy a space of more than 1·10 mètre in depth by 0·55 to 0·65 in width.

2. There is to be an elevated and spacious tribune for the accommodation of the President, and provided with a roomy seat on each side for the clerks of the house (*Schriftführer*). Each of these three seats is to be provided with a spacious desk. The same three seats are likewise to command a view of the whole of the hall.

3. The rostrum or tribune for deputies addressing the House is to be in front of the President's seat, and at a somewhat lower elevation. It is to be provided with a raised reading-desk and side-tables, as well as with two writing-desks and seats, one on each side, for the accommodation of the referents, or committee reporters.

4. There are to be writing-tables for six official stenographers in front of the orator's rostrum. A low barrier is to separate the stenographers' tables from the rest of the hall, and the stenographers' compartment is to be provided with a separate entrance with steps descending to their private room in a lower story, so as to obviate the necessity of their passing through the hall itself.

5. On each side of the President's tribune there are to be tables with twenty-four seats, for the accommodation of the members and commissioners of the Federal Council. It is of particular importance that the speakers in these seats should be thoroughly audible in all parts of the house.

6. There must be a table upon which official documents may be deposited.

7. There is to be a *loge* or box for the accommodation of the Imperial Court and the allied princes. It is to be provided with twelve *fauteuils*, and is to have in its rear an adjoining saloon, ante-room, and lavatory. These apartments are all to be to the left (not in the rear) of the President's tribune, and are to be accessible by an entrance separate from all the other ways into the house.

8. There are to be one or two *loges* or boxes, with twenty-four *fauteuils* in all, for the accommodation of the *corps diplomatique*, and provided with an adjoining ante-room and lavatory.

There are further to be provided:—

9. A *loge* or box, with about forty seats, to be placed at the disposal of the members of the Federal Council.

10. A *loge* with about eighty seats to be placed at the disposal of the deputies.

11. A *loge* with about thirty seats for members of the various German Legislatures.

12. A *loge* with about sixty seats to be placed at the disposal of the Administrative Boards.

13. Two reserved *loges* with thirty seats in each.

14. Several boxes with altogether about 150 seats for the accommodation of the public.

All the last six sets of *loges* (9 to 14) are to be provided with ante-rooms and wardrobes of sufficient size.

* It is interesting to learn of legends still in existence relating allegorically the conquest of the *malaria* under the figure of a horrible demon devouring the people of the district, but eventually destroyed, and only returning to visit the country when the neglect of the Middle Ages had allowed the undrained marshes to render the plains pestilential.

15. *Loges* (or galleries) for the representatives of the press, with eighty seats in all, sixty of which are to be provided with locking desks.

All the *loges* enumerated from the 9th to the 15th are to be accessible by entrances, quite separate from all the others leading into the hall. All the *loges* must command a good view over the hall, and it is of importance that the speakers should be well heard, more particularly in the Journalists' Gallery (15th). It is left to the option of the architect to make some of the *loges* project beyond the walls into the House itself, but the extent of such projection must not exceed 1 mètre. The entrances into the different *loges* are to be protected from draught; and extra ways out are to be provided for use in case of emergency.

B. The other apartments which are to be provided on the level of the floor of the Chamber of Session are:—

1. A large Conference Hall for Deputies, immediately contiguous to the Hall of Session, and with an area of not more than 500 square mètres at the maximum. This hall is to be adapted for use on the occasion of any festivities or ceremonies, or for large committee meetings. Particular attention is to be paid to the decoration of this hall.

2. A writing-room (or library) for the President of the Imperial Parliament; and

3. A reception-room for the same official. Each of these two apartments is to be 40 square mètres in area.

4. An ante-room of 20 square mètres to the two preceding apartments.

5. Two rooms for the Clerks of the House, each of 40 square mètres in area.

The rooms from No. 2 to No. 5 are to be placed near the Hall of Session, so as to be readily accessible from the President's tribune.

6. A writing-room (or library), for the Imperial Chancellor, of an area of 40 square mètres.

7. An audience or reception room for the Chancellor, also of 40 square mètres area.

8. An ante-room to the two preceding, of 20 square mètres area.

9. Two official apartments for the heads of the Imperial Administrative Boards, each of 40 square mètres area.

12. A Hall of Assembly for the Federal Council, not too distant from the Chamber of the House, and of 200 square mètres area. This apartment is to have plenty of light from high windows on the sides, or from above. The hall is to be provided with a council-table, 1·25 mètres in width, and with sixty *fauteuil* seats round it.

13. An ante-saloon to the preceding, of 80 to 100 square mètres area.

14. Two committee-rooms for the Federal Council committees, to be near their Assembly-hall (12), and with an area of 80 and 40 square mètres respectively.

15. A wardrobe for the Federal Council, 40 square mètres.

The apartments here numbered from 6 to 15 must be approached by an entrance entirely independent of any other way into the House.

16. A refreshment saloon, with three adjoining apartments, covering altogether 400 square mètres.

17. One or two reading-rooms for literature of the day: area, 250 square mètres.

18. Two writing-saloons: area together, 150 square mètres.

19. At least two well-lighted wardrobes for the accommodation of the 400 deputies.

The rooms numbered 16 to 19 must be situated so as to be in as convenient connexion as possible with the chief Hall of Assembly and the Conference Hall. (See A and B 1.)

C. This division refers to the apartments which are to be arranged on the various other floors of the building, according to their several purposes and requirements. They include,—

1. Six conversation or reception rooms, of different sizes, for the use of deputies; area together, 180 mètres. These rooms are to be mostly as near as possible to the Session Chamber and large saloon, and as near as possible on the same level. They are also to be convenient of access to the public.

2. Four lavatories or toilet-rooms for deputies, each 20 square mètres area.

3. Six committee-rooms for the sections and committees of the Imperial Parliament; each to seat sixty persons, and each of an area of 130 to 150 square mètres.

4. Two larger committee-rooms for the sections, committees, &c., of the Imperial Parliament, each seating 150 persons, and each of 300 square mètres area.

5. Eight committee-rooms, each for thirty persons, and each covering 80 square mètres.

6. Several small reception-rooms, as close as possible to the above rooms (C 3, 4, and 5).

7. Rooms for the representatives of the press, with a total of eighty well-lighted writing-seats, to be arranged in at least eight rooms of a total area of 300 square mètres. These rooms are to be placed so as to be as directly accessible as possible from the press lobby.

8. An ante-room for the accommodation of news-messengers; area 40 square mètres.

9. An office for the director of the Bureau of the House, of 40 square mètres area.

10. An ante-room to the same, 20 square mètres.

11. A second ante-room to the same, for the use of the public, 30 square mètres. The room C 9 must be accessible from and within a short distance of the President's tribune. Room C 11 must have a special entrance for the public.

12. Two saloons for the registrars, covering jointly 200 square mètres.

13. A cashier's department, 40 square mètres.

14. A clerks' room, with fifteen well-lighted writing places.

15. A reference-room, 20 square mètres.

16. Two rooms for the expedition of printed matter, of 40 and 100 square mètres respectively.

17. A room for the chief messenger, contiguous to the preceding, 60 square mètres.

18. A room for sixty office servants and messengers of the Reichstag, 100 square mètres.

19. A wardrobe for the preceding, 40 square mètres.

20. A room for the office servants of the Federal Council, to be placed near the entrance to the Federal Council Chambers, 40 square mètres.

21. A well-lighted room for the archives, specially secured against the dangers from without, as well as against fire, 200 square mètres.

22. A room for the storage of old documents, 200 square mètres.

23. The Library of the Imperial Parliament. The area is not to exceed 1,000 square mètres; the exposed shelf surface is to cover at least 2,500 square mètres.

24. Two offices for the Librarian and his assistants, of 60 and 40 square mètres area respectively.

25. A reading-room for deputies, of 60 square mètres.

26. A writing-room for the same, 40 square mètres.

27. An attendants' room, near the Librarian's office, 30 square mètres.

Rooms 23 and 24, and rooms 24, 25, and 26, must be connected with each other.

D. The rooms in the lower story are:—

1. Two apartments for the official stenographers, each with 15 well-lighted writing-places, each apartment being of 60 to 80 square mètres area.

2. A room for the correction of stenographic reports, with three writing-places, and with reading-desks for the deputies, 60 square mètres.

3. The following vestibules:—

a. A vestibule for the deputies with a covered principal entrance.

b. A carriage entrance and vestibule for the Imperial Court, the allied princes, and the *corps diplomatique*.

c. A carriage entrance and vestibule for the Federal Council. It is permitted to substitute a single carriage entrance and vestibule for the two mentioned under *b* and *c*.

d. A vestibule for the public. In arranging the vestibules care is to be taken that the entrances for the ordinary business of the House are not to be on the Königs Platz side.

4. A room for the post-office, 40 square mètres.

5. A room for the telegraph service, 40 square mètres.

6. A room for the telephone service, 40 square mètres. These rooms, D 4, 5, and 6, must be near the vestibule D 3 *a*.

7. A ticket-office near the vestibule D 3 *d*.

8. Doorkeepers' rooms on the vestibules.

9. Apartments for the house inspector,—four rooms with appurtenances.

10. Three sets of doorkeepers' apartments, each of two rooms with appurtenances.

11. Two sets of stokers' or men-servants' apartments, each of two rooms with appurtenances.

E. In addition to the above, there are further to be provided:—

1. Kitchen for the refreshment contractor.

2. Room for a steam-engine, with boiler-house.

3. Coal and fuel house, to be near the heating apparatus and boiler-house.

4. Room for keeping utensils.

5. Some small workshops for the use of men working on the premises.

6. A small printing-office.

7. Guard-room for the accommodation of the police and firemen, 60 square mètres.

The edifice is to be built fireproof throughout. The staircase for the Imperial Court, those for the Federal Council, those for the deputies, and finally, those for the use of the public, are to be kept entirely separate from each other. From without they are to be accessible by approaches as short and as well lighted as possible. There are also to be separate entrances for the officials, attendants, and kitchen servants. Water-closets, urinals, and lavatories, the latter in separate rooms, are to be provided in sufficient number on each floor and near each group of rooms, and are to be light and roomy.

Great importance is attached to all the rooms where business is to be transacted, and which will accordingly be occupied in the daytime,* being so arranged that they can receive the daylight in as direct and convenient a manner as possible.

A GREAT PRE-HISTORIC "FIND."

IN the September of last year, it will be remembered by our readers, an International Congress of Geologists was held at Bologna; and the occasion was chosen by the municipality to re-open its *Museo Civico*. The new museum, though inaugurated so modestly, now ranks, from the exceptionally rare nature of its contents, among the famous museums of the world. To the student of that most recent of the branches of antiquarian research known as pre-historic archæology, the Bologna Municipal Museum is the richest in existing specimens of the art of the so-called "bronze age."

With even the conscientious traveller in Italy it has so far been the custom to "do" Bologna in a very short visit, with a homage paid to Raffaelle's "Santa Cecilia," the sweet and simple works of the goldsmith painter, Francia of Bologna, and of that artist whose work so influenced the young Raffaelle, Perugino, a glance at the square yards of canvas covered so deftly by the Caracci, Guido, and their prolific school; with a visit to the gaunt yet grandiose basilica of San Petronio, San Domenico and its shrine by Nicolo Pisano, the leaning Towers and the University. Now, however, the new museum offers a feature meriting somewhat more attention,—a museum, equal if not superior in interest to the famous Pompeiian collection at Naples, carrying one back, as its contents do, to almost the very darkest hour of the buried past, to the life of a civilisation so distant that, a generation ago, its very existence was not even suspected by our archæologists.

Bologna is situated, as a reference to the map will show, just at a passage-way of the northern Apennines; from the most distant times it must therefore have been the exchange and mart for the peoples of Northern Italy and those of the Tuscan cities. While the tribes of the Stone age occupied the *terra-mares* of Emilia, and built round Modena and Reggio their little fortified hamlets in the midst of the marshes of the valley of the Po, the vanguard of the Aryan migration,—those Pelasgians armed with bronze weapons, traces of whom are met with on the shores of Asia Minor, in Greece, in Algeria, in Carthage, and in antique Etruria,—settled down in Central Italy, and founded that sturdy Tuscan race scarcely changed in the 3,000 years of its existence. Soon driven back to the west of the Apennines by the second branch of the people who had advanced up the valley of the Danube, the Umbrians, the Celts, and the Latins, it abandoned to them the eastern coast of Italy, the lower valley of the Tiber, and established at the ancient Felsina a sort of mart where the products of the South were exchanged for those of the North. On stirring the soil in the immediate neighbourhood of Bologna, at La Certosa, at Ranzano, &c., are found invaluable vestiges

* The German Parliament always meets and transacts its business in the daytime. A night-sitting only occurs on rare and extreme emergencies.

of the Bronze age and of the first Iron age belonging to the Pelasgic period. The whole district is, in fact, a huge pre-historic necropolis, the tombs of which yield every day the rarest relics of a civilisation as yet scarcely known. Swords and bronze poniards, hatchets, bracelets, *fibulæ*, and ornaments, vessels of blue Oriental glass, huge funerary urns, red and black terra-cottas with characteristic decoration (among which is includded the handled cross,—*svastika*,—of the Vedic religion), harness and horses' bits in bronze, are found,—all the still recognisable products of the industry of two races absolutely distinct, and arrived at a very differing degree of skill in the metallurgic arts, at a very differing degree, that is to say, of civilisation; and Bologna offers specimens in profusion so great that the archæologist remains, on a first visit to the museum, astounded at the sight of such marvels.

It was not long since that, in the excavations necessary for laying down a drain in the centre of the city, near the church of San Francisco, perhaps one of the largest "finds" of pre-historic bronzes ever made was unearthed. At a small distance below the surface, under a stratum of ashes and charcoal, the pick and shovel laid bare one of those immense urns in terra-cotta which were used in classic times as barrels. The urn broke on contact with the air, displaying inside an extraordinary collection of bronze objects, all carefully packed, so as to occupy the least possible amount of space, the heaviest and largest at the bottom and against the sides, the lightest at the top and in the centre,—a lesson in the art of packing which, several thousand years after, may be taken with profit. There were found literally several hundred hatchets, representing all the various Mediterranean and Danubian types,—sickles, chisels, saws, files, gouges, knives, razors, bracelets, *plaques* covered with embossed ornaments, more than 2,000 *fibulæ*, lance-heads, poniards, swords, and ingots of metal. Altogether there were 14,000 objects, the weight exceeding a ton and a half. The greater part were well worn, or purposely broken up. Some of the jewelry had been mended with iron rivets, that metal being then doubtless considered as precious. It was easy to recognise that either a foundry or the stock of a bronze-smith of the first Iron age had been unearthed. This large quantity of old bronze, belonging to preceding periods, had, without doubt, been gathered in the neighbourhood by some industrious metal-worker, who was perhaps on the point of re-smelting the whole, when, surprised by a war, by a siege, or by an invasion, he determined to bury the mass in his workshop, hiding the place with the ashes from his fireplace. The danger over, he intended to unbury his treasure; but the accidents of war, his death, or that of those to whom he may have confided the secret, prevented the discovery of the store, which was left to the present generation, as if by the design of Providence, to show us something of the otherwise undiscoverable existence of 3,000 years ago.

Up to the present date competent authorities agree in declaring that nothing comparable to this "find" of prehistoric antiquities has ever been made.* The whole sixty-seven discoveries so far made in France and Switzerland have yielded little over 3,000 specimens. At Bologna we have a complete collection of the tools, implements, and ornaments of this distant period. A careful study of these relics will enable the archæologist to reconstitute the whole industrial civilisation of the proto-Etruscan races, a branch of inquiry of a most novel and attractive nature.

The Museo Civico, in which all these treasures have been arranged in admirable order, though it has been long in existence, may now be said to take its place as one of the important museums of Europe. It is situated only a few steps from the cathedral of San Petronio, on the Piazza, which, from the spirited modern statue (even in our country not unknown) erected not long since to the memory of Galvani, bears the name of that great scientist, who heralded so many of the most extraordinary discoveries of the present century. The museum, in addition to its pre-historic treasures, possesses not a few other remarkable works scattered through its twenty-three rooms, four of which contain a collection of Egyptian antiquities, which, if falling far short of that in our national institution in Great Russell-street, or that in the Louvre, numbers not a few works of exceptional interest, well known to all Egyptologists. It is beyond the limits of our space to speak of these at length; suffice it to say that the Bologna Municipal Museum possesses one of the only two *steles* known to exist on which is shown the horse domesticated by the Egyptians.

* Such is the opinion of the writer who, in the *Nouvelle Revue* for Jan. 15, 1882, has reported the Geological Congress, mentioning incidentally the "find" of which we speak above.

CANON BARRY AND THE ARCHITECTURAL MUSEUM.

The annual public distribution of prizes and medals to the successful students connected with the Royal Architectural Museum and School of Art took place on Friday, the 3rd inst., at the Museum in Tufton-street, Westminster. The chair was taken by the Rev. Canon Barry, D.D. The following is the list of the prizeholders:—

Medals.

James Thomas, design for mosaic pavement,—silver medal.

Walter Allan, panel for hunting-seat (model), which also gained the Plasterers' Company's first prize for model,—bronze model.

Walter Allan, statuette of man and horse, which also gained second prize of 20*l.* from the Goldsmiths' Company last year,—selected Pilasches and Lacroix's "Arts of the Middle Ages" in lieu of second bronze medal.

Alfred Johnson, painting of figures from life,—bronze medal.

Thomas Treleaven, model in clay from antique,—bronze medal.

Third-Grade Prizes.

William Banks, one compartment of music-room, in monochrome, in competition for the Plasterers' Company's prize,—"Moody's Lectures."

George Catchpole, design for same subject and object as the last (Mr. Catchpole has this year since gained a 10*l.* prize from the Goldsmiths' Company),—"Moody's Lectures."

Joseph Holgate, group of models in sepia,—"Perspective."

Joseph Holgate, outline of ornament from cast,—"Painting Explained."

Joseph Holgate, shading from cast,—"Anecdote Lives."

Alfred Johnson, shaded drawing from ornament,—"Dictionary of the Arts."

George E. Laurence, architectural drawing,—"Art Tour in Normandy."

Albert D. Smith, drawing of architectural ornament,—"Art Tour in Normandy."

Second-Grade Prizes.

Robert Stephen Ayling, geometry,—third-grade, perspective, and certificate for second-grade freehand, perspective, and geometry.

Benjamin Arthur Colley, perspective,—drawing-board and squares, and certificates for freehand and perspective.

Walter Hugh Squire, freehand-drawing,—Cotman's "Outlines," and certificate for freehand.

Phillip Charles Watts, freehand-drawing,—box of colours and certificate for freehand.

Second-Grade Certificates.

William Joseph Ferguson, freehand-drawing, perspective, and model-drawing.

James Thomas, full second-grade, four subjects.

William Toogood, freehand and model drawing.

Building Construction Prizes.

Robert Stephen Ayling, building construction, elementary,—Parker's "Glossary."

Albert D. Smith, building construction, advanced,—"Wrought-Iron Work."

Museum Sketching Club. Annual 5l. 5s. Prize.

George W. Ward, best set of sketches,—books purchased with the 5*l.* 5*s.*

Canon Barry, after the distribution, addressed the students at some length. He said that he accepted the invitation to be present for two reasons,—firstly, that to any one who bore his name the claims of architectural art must always be peculiarly strong, especially under the shadow of the great tower of Westminster; and, secondly, because he was associated with the services of that glorious Abbey so near them. He had now arrived at that period when the prizes of life had not that charm for him they formerly possessed, but he well remembered the encouragement and help they gave, partly because they were a kind of test and reality of work done, and partly because they signified appreciation. Prizes had an important function in the process of education, but to those who had failed to obtain them he would say that if they had been sincere, earnest, and honest in their work, they had gained in knowledge, which, after all, was the main object of attending a school of art. As to the function schools of art discharged, perhaps there was an advantage in listening to the remarks of one who, speaking as a layman, had an interest and a sympathy in art. Lay opinion was thought to be a valuable corrective of the supposed vagaries of ecclesiastical opinion, and he hoped that the expression of opinion on art subjects as they appeared to the lay and educated mind might not be without value to some present. He did not suppose that schools of art were likely to make any great artists; they would not create, although they might discover and help, a heaven-born genius; but one function of these schools was undoubtedly to help to create a general atmosphere, so to speak, of appreciation, of understanding, and criticism of art, without which, if history might be trusted, great artistic achievements were very seldom met. In all great movements in science, art, or statesmanship, they wanted, according to the old proverb, both the hour and the man. By the union of the two great artistic advance had always been made; it was the atmosphere of artistic feeling which encouraged those whose names were in every mouth. He hoped and believed that in this nineteenth century something more than a general artistic appreciation of schools of art, which were doing a most useful work, would follow. He could remember the time when undoubtedly in England there was far less artistic feeling and far less appreciation of art than there was at the present day, and when in London any attempts to break through the bald, ugly monotony in respect to architecture were few and far between; when it was thought wasteful to spend any of the public funds even on the care and decoration of the parks, and on picture galleries and museums. At that time any attempts at artistic culture were looked upon as visionary, obsolete, and out of all question; but within the past thirty or forty years there had been an enormous change in this respect. Schools of art had been partly the cause and partly the effect of a more general diffusion of artistic sympathy, otherwise they never would have been created, and of all the many debts they owed to the late Prince Consort there were perhaps few greater than that due to him for teaching with authority those who ruled the destinies of this country the importance of the cultivation of art in promoting the happiness and welfare of the people. Schools of art had sprung from that movement and had directed and guided it. He (Canon Barry) rejoiced in the fact that the school of art connected with that Museum was in a flourishing condition, and that the Clothworkers' Company had resolved to grant a subsidy of 20*l.* per annum for five years, "in the full hope and trust that other companies and individuals will contribute the residue of the modest addition of 100*l.* per annum" which was required. The Architectural Museum had a magnificent set of specimens, which had not been collected without the expenditure of much time and talent by the leaders of the architectural profession, whose labours had not been in vain. Many of the students no doubt attended these art schools for the technical training which they abundantly furnished. If they were to hold their place in the world, either in manufacture or art, they must guide native skill by some knowledge of scientific principles and artistic taste, unless they would be distanced by Continental rivals. As to technical skill and taste, art schools were admirably qualified to teach both. He urged the cultivation of the imaginative faculty, which he considered necessary for a thorough artistic education, and also the cultivation of beauty, which was the most important factor in individual progress and national welfare. Those persons who raved about sunflowers and languished over lilies were getting their meed of satire, which, he hoped, would do some good; but while exaggerations should be chastised they did not want the popular mind to swing backward and forward in regard to art culture. He hoped students would cultivate what was useful and beautiful in art. He did not think that architecture was so liable to extravagance as the other arts. The architect had to unite the claims of beauty with those of usefulness, and the two had to be studied together; he had to study the question of finance and be subjected to more interference on the part of employers than was the case with any other art. These conditions tended to sober the work of the architect, and to keep it from extravagance and vagary. While sculpture and painting must necessarily appeal to the comparative few, architecture, from the nature of the case, was, like music, the art of the many; it had to appeal to the verdict of public opinion and taste. In conclusion, Canon Barry expressed his hope that the art school connected with the Architectural Museum would conduce to the real progress and welfare of the community.

Mr. J. P. Seddon, in proposing a vote of thanks to the chairman, looked forward to a promising future of that art-school, particularly as their

pecuniary difficulties were now somewhat lightened. They had secured a new lease of the premises, and had largely increased the accommodation for the students.

Mr. Maurice B. Adams, in seconding the resolution, referred to competition, stating that not only had they to compete with European but also with American and Indian architects, and therefore he urged the better cultivation of native talent.

The vote of thanks having been carried, Mr. Randall Druce announced that their president, Mr. Beresford Hope, M.P., had again offered a prize of one guinea for attendance; while Mr. Allen, a builder, had contributed two guineas for the purpose of a prize to be determined by the committee.

The proceedings then terminated.

THE CONSTRUCTION AND ARRANGEMENT OF THEATRES.*

THE frightful catastrophe by which our city was overtaken on December the 8th, 1881, has once more brought the question of the construction, arrangement, and safeguarding of theatres into the foreground. The purely humane aspect of this terrible misfortune has found expression in a most touching manner by general sympathy and energetic momentary assistance. But the public have also come to the conclusion that something more effectual must be done, and such measures taken as will render similar calamities impossible in the future. Although there is every desire to meet the case, and to expiate the heavy guilt of neglect, it is, in the first place, necessary to recognise the conditions demanded for the full safety of a theatre-going public. In order to arrive at this knowledge, it is requisite to investigate the causes of fires in theatres and the accidents connected therewith, the consideration of which forms the first portion of the labours of the committee. From the teachings of these sad statistics only will it be possible to point out those arrangements and measures which might tend to ward off such dangers in the future from the public frequenting theatres, or at least to reduce such risks to a minimum.

Owing to the limited time placed at their disposal for inquiry and deliberation, the committee will only be able to state general views; but they hope, nevertheless, to give a practical direction to the always well-meant but frequently *dilettante* efforts for improving our theatres which are now being made on all sides. Although on this occasion they will scarcely be in a position to say anything essentially new, and many references must be made to sufficiently known facts, a general view may be obtained of universally-recognised rules for the construction and arrangement of theatres by a correct elucidation of such facts and a suitable grouping of all data. The present time appears likewise appropriate for at last carrying into execution all that has so long been proposed for the protection of the public and all desirable reforms in theatres. The committee, for this reason, do not consider it necessary to connect its investigations into the causes of similar catastrophes with the circumstances, not yet fully explained, attending the fire in the Ring-theater. This case is by no means an isolated one; it forms a mere link in the chain of accidents in theatres, which may be explained by their structural conditions, and by which the public are temporarily frightened out of the habitual recklessness with which they seek pleasure in dangerous buildings, without even the most necessary steps being taken for a radical remedy after confidence has returned.

Fires in theatres are by no means of rare occurrence; they are as old as our modern habit, dating from the middle ages, of constructing and arranging theatres, and are most intimately connected with this system. The history of the classic theatre, even, tells us of fires in theatres, and the frightful catastrophes connected with them. But it was from those recurring and sad experiences, and in correct appreciation of what was required, that the instructive and wonderful system of the ancient theatre was developed, which was designed for the presence of large masses at representations, as well as for accessibility, and by means of which, owing to its sensible arrangement and architectural construction, fires and similar accidents, to which our modern theatres are liable, were excluded. Most of those ancient theatres were utterly destroyed by the fall of classic life, and but few massive ruins of those wonderful structures have been able to defy the storms of twenty centuries. Our modern theatre may in many respects, especially as regards durability, be looked upon as the very reverse of the classic theatre. It originated in quite different conditions. As the classic theatre had for its exit the bottom of the valley, and as this natural formation, so suitable for large masses and corresponding accessibility, found architectural expression in permanent theatres, so our modern theatre was principally developed out of the courts of monasteries and similar courtyards used for the representation of passion plays. The roofing in of such courts, as well as the transformation of courtyard windows into boxes, has gradually led to the modern system of construction, which in its essentials has remained unchanged for the last two centuries. The scenic requirements, which have grown especially within recent times, and more particularly those for illumination and lighting effects, have enormously increased fire risks in theatres; while in old-established theatres the antiquated system of communications, which does not adequately provide for the safety of the public, has remained essentially the same. The ancients possessed a wonderful power of adaptation, which enabled them to develop their buildings by the experience gained in provisional wooden structures, suiting what they had to requirements, and thus proving their title for architectural development.

The same cannot, unfortunately, be said of the modern theatre. The ever-recurring calamities in theatres, ever increasing in intensity, fully prove that the planning and construction of modern theatres have not kept pace, even proportionately, with their constantly increasing dangerous nature; that strikingly little use has been made for these structures of the great progress achieved by the architect and engineer; that the frequently very rich and costly exterior, which gives to a theatre the appearance of architectural merit, is in no proportion to the condition of its interior arrangement, to which is attributed the comparatively short life of our theatres. Herr Fölsch, in his excellent work on "Fires in Theatres," states the average age of a theatre at 22¼ years, which agrees nearly with the age given by Signor Rigione for Italian theatres, namely 22 years. With this fact before us, it seems strange that millions are spent on buildings of such a perishable nature, and that the life of the theatre-goer, in whom the monumental appearance of such structures gives rise to something like a feeling of safety, should thus be exposed to existing dangers, while, at the same time, and principally, that safety ought to be attained by improving the interior arrangements. Not until then should the modern theatre be treated, like its classic model, architecturally. Although it cannot be overlooked that in newer theatres, as compared with older buildings, essential improvements have been effected,—as, for instance, the auditorium is made fireproof, and the communications are improved upon,—a more careful consideration will lead to the conclusion that even in the largest and most handsome edifices of this description it has not been possible to exclude the fear of accidents, and that a coincidence of unfavourable circumstances would give rise to serious catastrophes. To indicate them in a few words, it need only be pointed out that the stages of all theatres of the present day, from surrounding conditions contain the origin of their destruction. But even the parts of the theatre intended for the public, although they are said to be constructed fireproof, and are spacious in some parts, do not supply a sufficient guarantee in cases of serious danger. The spaciousness only benefits the public using the boxes and stalls, while less care is taken of the upper tiers and galleries.

A few data taken from the work of Fölsch will suffice to prove by statistics what has been stated. We find there a list of 460 theatres totally destroyed during the last 100 years. But the danger of fire is permanent, and a conflagration is mostly nipped in the bud by constant supervision and instant quenching of easily-kindled fires; but should this fail, should the fire once seize upon larger portions of the combustible materials or parts of the building, the doom of the theatre is sealed. Experience teaches that fires in theatres, if once developed, cannot be extinguished, and those 460 cases cited by Fölsch have only ended in the complete destruction of theatre buildings. As in the list mentioned there appear also important theatres constructed according to most recent plans, which, in spite of all supposed improvements, could not be saved from complete annihilation, there can be no longer any doubt but that the cause must be sought in the system upon which stages are arranged. This supposition is confirmed by the fact that the number of fires in theatres and their destructive effect are continually on the increase, which may be partly explained by the multiplication of theatres, but which also proves that rational progress in removing the element of danger has not been made, as the following statement shows:—

For the years	1761–1770 are noted	8	fires in theatres.
,,	1771–1780 ,,	9	,,
,,	1781–1790 ,,	11	,,
,,	1791–1800 ,,	13	,,
,,	1801–1810 ,,	17	,,
,,	1811–1820 ,,	16	,,
,,	1821–1830 ,,	30	,,
,,	1831–1840 ,,	25	,,
,,	1841–1850 ,,	43	,,
,,	1851–1860 ,,	67	,,
,,	1861–1870 ,,	97	,,
,,	1871–1877 ,,	99	,,

Since the beginning of 1871 to the middle of October, 1877, on the average, more than thirteen theatres have been burned down each year. With regard to the commencement of fires, Fölsch has collected the 289 fires of which such particulars are supplied into five groups, as follows:—

1. Began during the day	55	fires, or 19·4	per cent.
2. Began an hour before admitting the public	15	,, 5·2	,,
3. Began during representation	36	,, 12·4	,,
4. Began two hours after representation	69	,, 23·9	,,
5. Began during the night.....	113	,, 39·1	,,

It will be seen from these figures that, fortunately, the percentage of fires during representations is a proportionately low one, which is explained by the greater care bestowed by those in charge during the presence of the public; while the largest percentage is that of fires during the night, at a time when, consequently, there is the least supervision, and a conflagration may most easily break out from burning materials left from the representation. A third statement gives—

136 fires, or 34·4 per cent.,	from	January to March;
100 ,, 25·3	,,	April to June;
70 ,, 17·6	,,	July to September;
90 ,, 22·7	,,	October to December;

from which it may be seen that fires in theatres are most frequent at the height of the theatre season, and most probably in proportion to the danger increased by warming the building.

If we inquire into the causes of the origin of such fires, and the fatalities attending them, it will be found that, with few exceptions, the fire has originated on the stage, which will give surprise to no one who has ever cast a glance at the enormous mass of combustible and easily inflammable materials there heaped together, and the dangerous manipulation of naked lights. To this must be added the manipulation of changing gaslights effected by india-rubber pipes, of fireworks and other explosive materials, the entirely unavoidable escapes of gas, and, finally, explosions of gas actually taking place. The danger of fire on stages is so great in consequence of existing arrangements and the habits of those engaged there that we need not wonder at the large, but rather at the comparatively small, number of really developed fires in theatres. It depends, indeed, upon the skill and the presence of mind of the persons engaged there if the nightly-recurring danger is mostly fortunately averted from the public. But if once the fire gets hold of the stage, and if the latter cannot be shut off immediately fireproof from the auditorium, which has not at present been achieved in really developed conflagrations, the flames turn by natural laws towards the auditorium, which acts, in consequence of the ventilating-shaft over the chandelier, like a chimney, and the fate of the theatre is decided. Although the theatre is supposed to be constructed fireproof, such constructions do not withstand the enormous intensity of the flames, and the complete destruction of theatres is a fact hitherto disproved in no single instance.

The value thus consumed by fire, which is estimated by Fölsch for the last 100 years at 25,000,000*l.*, recedes into the background before the thousands of human lives which have been lost in such catastrophes. Up to the present

* Report of the Committee appointed by the Austrian Society of Engineers and Architects (Vienna) to inquire into the principles to be recommended in the construction and arrangement of theatres with a view to safety.

there has been no fire in a theatre during a representation in which the loss of human life has not had to be deplored. This sad fact will cause no surprise if we examine more closely the condition of our theatres. The flames, fed by the masses of inflammable materials, especially as long as they do not find a way through the roof into the open air, develop enormous quantities of smoke and deadly gases, which must fill the auditorium so rapidly that, even with numerous exits, an escape of all those present in the theatre is much to be doubted. But in very many theatres the communications are in no proportion to the public which must pass through them. The least provision is made for the gallery public, who have to take the longest way before reaching the open. Very frequently one flight of stairs serves for several galleries, or several stairs give on to a common passage, where, naturally, conflicts are unavoidable when several human streams rush forward at the same rate. Although such arrangements may suffice under normal conditions, the need for ample and practically constructed communications increases materially in the hour of danger. The public, seized by panic, rush in blind haste to the exits, and if there are not a sufficient number of them and of stairs, or if they are not of such a condition as to allow the human stream to move forward undisturbed by the pressure of the masses behind, until it reaches the open, there is no chance of escape for these unfortunates. If such communications are not constructed in simple and natural curves and divisions, or if they consist of unequal and too many flights and landings, or if they are interrupted by intervening steps, they may become causes of the greatest danger. The public, pushing and rushing, falters and falls, and the masses coming up from behind soon form a coil that cannot be disentangled. While, under normal conditions, notwithstanding all obstacles caused by existing arrangements, a theatre may be emptied in five minutes, that short delay of time becomes fatal in the moment of danger. A wall of human beings thus formed prevents those behind from escaping; they look despairingly for openings, and, if they do not find them, perish miserably. The fate of all those thus arrested, if they are not crushed or trampled to death, is death by suffocation, for in the atmosphere which develops itself in the theatre under the conditions described no human being can exist long. For this reason, open flames, which cannot be fed by such air, must soon become extinguished. It has been proved that during such events the gas is frequently deliberately turned off, which increases from the first the confusion of such catastrophes and the despair of those in the theatre. When, under the conditions mentioned, no more persons were seen to come from the lobbies, the erroneous conclusion was very frequently come to that the theatre was empty, which, at Carlsruhe in 1847, gave rise to the cruel measure of firmly closing all doors, in order to shut off fresh air from the flames. The frightful phenomena of fires in theatres may consequently be very simply defined. A mass of the most inflammable materials is accumulated in theatres; gas lights, a vital element of the modern stage, are constantly playing around them, and the thousands of human beings who are crowded together in a narrow space find in case of need very seldom those arrangements which would enable them to save their lives.

Our police building regulations are, on the whole, perhaps the most severe in existence. Notwithstanding a certain ponderousness—which restrains the liberty of the individual, and sometimes adds to the expense of building—however, they have effected much good, especially with regard to the prevention of fire. What violent contrast is presented by the permanent danger in our theatres! For simple private residences there exist severe regulations, but in our theatres at the present time, no precaution is adopted which would confine a conflagration to its several parts. The use of fireworks is strictly prohibited throughout the city; on the stage, the most dangerous place of any, it is permitted. In the smallest dwelling the construction of stairs and landings is ordered by strict, almost contemptible, regulations; in theatres, where there is often assembled the population of a small town, stairs are erected which would not be sanctioned in an ordinary dwelling. Under such conditions, we need not wonder that fires in theatres are of frequent occurrence, and that they generally end in frightful calamities. The horrors of December 8th will probably have created such an impression as to lead to effectual reforms. The recommendations here appended may serve for future guidance.

The removal of the dangers above pointed out requires strong measures, which should have the aim of diminishing the dangerous nature of theatres, and which would either prevent the breaking out of fires or serve to nip them in the bud. But it involves likewise the necessity of designing theatres in such a manner as would confine a fire, should it break out notwithstanding the measures of safety adopted, to the spot where it originated, and as would enable the public assembled to leave all the parts of the house in safety. It appears from the programme thus laid down that reforms are necessary both in the construction of theatres and in their supervision and administration. As human power and human aid in times of extraordinary panic have been shown always to fail, it is imperative that our principal efforts ought to be concentrated upon rational reforms in the construction of theatres, leaving to human agency only a minimum share of co-operation.

In entering upon the measures thus briefly sketched out, we must, in the first place, bear in mind the diminution of fire risks. In this respect the principle ought to be laid down that theatres should be erected completely isolated, and be as far as possible from other buildings. Although there may be exceptions in the case of smaller theatres, and if proper precautions are adopted, the isolated position of a dangerous object exercises a tranquillising effect both upon those assembled in theatres and upon the neighbourhood. The history of fires in theatres fully shows what ruin has been wrought by them amongst the surroundings, and how fires originating in neighbouring buildings have proved fatal for theatres. By what follows it will be seen that the isolation of theatres is a necessary condition for suitable and practical communication.

The removal of all inflammable objects that may be dispensed with, or rather their diminution to a minimum, may be looked upon as another step for lessening the dangerous nature of theatres. According to this principle, the usually very large quantities of piled-up decorations or properties, the store-rooms filled with costumes and other easily inflammable materials, the painters' rooms, workshops, and other objects which carry danger with them on account of the nature of the material of which they are made up, or of their manipulation, must be removed from theatres, and the articles deposited in the latter limited to those in daily use.

It cannot, further, be denied that a great part of the building and the machinery on the stage may be constructed of iron, instead of, as hitherto, in wood. But wherever it is considered necessary that wood should be employed, it must be protected by impregnation. It is a well-known fact that this mode of protection may also be extended to the linen cloth used for decorations, as well as to all the other easily-ignited materials. It is likewise known what amount of resistance this protective coating has met with on the part of painters, costumiers, and experts in theatrical matters. But those precautions will have to be finally adopted; the practical man will know how to deal with the objections raised, and, for the sake of safeguarding valuable human lives, old-established habits and scruples must be overcome.

Although, as may be expected, more use will probably be made in future of the progress made by engineers and architects in the construction and arrangement of theatres, the risk of fire will by no means be completely excluded from the stage. But the present state of technical science permits of the assertion that the auditorium may be made perfectly fire-proof in all its essential constructive parts. By other precautions, to be further discussed, that safety for the theatre-going public might at least be obtained which is based upon the principle of keeping fire out of the auditorium. As a matter of course, such additions to a theatre as might easily become the origin of fires,—for instance, private residences, store-rooms, restaurants,—would have to be excluded. For the practical purposes of guarding against fire, the stage and the auditorium must be considered as two entirely separate parts of a theatre. The former being supposed dangerous, the latter, on the contrary, fireproof, a complete isolation or fireproof separation of the stage from the auditorium would be the first step to be taken. A party-wall, therefore, which divides the building throughout its whole width and height,—which, by the bye, is the official rule for every dwelling-house,—becomes a *sine qud non* on account of its great importance in the case of a fire, forming in that instance a complete screen. Beyond the proscenium opening, it should have but few other outlets, the latter, as a matter of course, being shut by iron doors. No connexion whatever ought to be permitted between the attic stories of the stage and auditorium. Experience teaches us that just in this proscenium opening is hidden the greatest danger for a theatre-going public; and the method of properly shutting it off from the auditorium, or rather the iron curtain itself, forms one of the cardinal points in the matter here treated.*

UNIFORMITY IN BUILDING AND SANITARY REGULATION.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the seventh ordinary meeting of this Institute, held on Monday evening last, Mr. Ewan Christian, vice-president, in the chair,

The Secretary announced the decease of M. Hippolyte Durand, of Tarbes, honorary and corresponding member, who was the architect of several churches and other buildings, notably the church at Lourdes, celebrated for its "miracles."

Mr. J. Macvicar Anderson read a long list of names of gentlemen recommended for election as Fellows, Associates, and Honorary Associates.

The Royal Gold Medal.—Mr. Anderson also announced the recommendation of the Council as to the Royal Gold Medal for 1882. According to custom, it was the turn this year of a foreigner, and the Council had determined to recommend to the general body the nomination, as its recipient, of Heinrich Freiherr von Ferstel, of Vienna, who has erected a great many public buildings in the Austrian capital. The announcement was received with applause.

The Pugin Studentship.—Mr. Anderson further announced that the Council had awarded this year's Pugin Studentship to Mr. Francis Hooper, of Beckenham; the Sharpe Prize, value 10*l.* (in books), to Mr. J. A. Slater, of Bedford-square, who was second in merit; and a certificate of honour to Mr. H. H. Kemp, of Kilburn, who was third.

Mr. Joseph Boult, of Liverpool, who was announced to read a paper on the subject indicated above, was unable to be present, but the paper was read partly by Mr. White (who explained that Mr. Boult was not a member of the Institute, but he had been asked by the Liverpool Architectural Society,—who had been asked by the Institute to furnish a paper on the subject,—to represent them in the matter, which was of interest just now inasmuch as the Liverpool authorities were promoting a Bill in Parliament with a view to legislation on the matters indicated. If the discussion were adjourned, Mr. Boult would probably be able to attend). The purpose of the paper (which was a very long one, and of which we are here only able to give a summary) was, as Mr. Boult said, the consideration of those regulations which govern the supply of buildings of various kinds, including essential sanitary provisions. Architects about to build had to be acquainted with an indefinite number of existing codes, varying according to the locality. Mr. Rawlinson, C.B., had told him there were 1,000 urban and 600 rural authorities. Including by-laws, the number of varying codes had been estimated at not far from 2,000. It seemed not unreasonable to assume that all local peculiarities might be duly allowed for, anomalies disappear, and all practicable uniformity be substituted, in a general Act. Without attempting to get rid of indispensable technicalities, simplicity should be combined with uniformity, so that the number of regulations might be few and clearly understood.

Essentials v. Non-Essentials.—By the recognition of this principle,—namely, the avoidance of all confusion between essentials and matters desirable only,—the Model By-Laws, issued by the Local Government Board, and other like provisions, would lose much of that minuteness which caused them to resemble a carefully-prepared specification. This topic was dwelt on in illustrative general criticisms on typical regulations, to show the tendency to what the author deemed the excessive and at the same time unequal precaution which seemed to pervade almost all building and sanitary legislation, imposing

* The conclusion in our next.

most irksome and very needless restrictions upon important branches of trade.

Laying out Land for Building.—The term "over-crowding" had been very much abused by sanitarians, one of whom insisted on setting no more than five families on an acre, whereas model lodging-houses had shown that in such dwellings 1,500 people to the acre might enjoy excellent health. Density of population was to be measured not by area, but by cubic space, which might be indefinitely turned to better account by ventilation and cleanliness. Every additional item in the cost of a house, if not essential, however desirable it might be, increased the difficulty of providing indispensable accommodation for the helplessly poor, and in like manner every distribution of land not consistent with wise economy, and all structural requirements not absolutely requisite, should be carefully avoided.

Unbuilt Areas.—By the Metropolitan Building Act, a dwelling-house, unless its rooms could be lighted and ventilated from an adjoining street or alley, was required to have at the rear or side an open space, exclusively belonging to it, of at least 100 square feet. If any space were to be retained it could not well be less; but Mr. Boult's observation had convinced him that small open areas, instead of conducing to health, became harbours for filth, which, being constantly damp, through exposure to rain, often fermented and generated noxious effluvia. Besides, such a requirement hindered the erection of flats, such as those in Professor Cockerell's *opus magnum* at Liverpool,—the Liverpool and London Chambers. There should be as little interference as possible with the convenience of the public, and that convenience would be better secured by greater width of street, when practicable. Besides, it was useless to provide the means of ventilation for people not intelligent enough to make use of them. Various provisions in the Model By-laws, the Metropolitan Building Act, the Towns Improvement Clauses Act, and in provincial Acts and By-laws, seemed due to two conspicuous and deplorable causes,—first, to the absence of careful and systematic inquiry into the reasons why certain urban and surburban districts are especially healthy or unhealthy; and, second, to foregone conclusions proved by experience to be untrustworthy.

Damp-course.—In the absence of any really scientific investigation into the effect of damp-courses in walls, of laying concrete all over a building site, and of covering drain-pipes with concrete, it was not possible to show their sanitary necessity; and such nostrums of superstitious empirics should not be enforced on those more familiar with structural requirements. From this point of view criticisms were offered on the by-law framed under the Metropolitan Management and Building Acts Amendment Act of 1878, on the Model By-law, No. 17, and on others recently proposed by the local authority in Liverpool. A general regulation that effectual precautions shall be adopted to prevent damp rising into any wall seemed to meet the necessities of the case.

Foundations.—The discrepancies between eminent authorities on this subject provided a further illustration of the difficulty of framing minute rules. They seemed to show the wisdom of using more general language, such as that every site shall be thoroughly drained, and every building erected on a good solid foundation, artificial or otherwise; where requisite, the site should be covered with asphalte, concrete, or some other suitable material.

Drains.—The material, size, mode of laying, flushing, and ventilation of drains, were all items worthy of much more intelligent consideration than they seemed to have received from the framers of various enactments. The first condition, governing every system of drainage, involved the requirement that all parts of the building should be above the sewer into which it was to be drained. But this involved the liability of the local authority to put their sewers in at such a reasonable and practicable depth as not to deter building-owners from having reasonably deep basements. A sufficient check on any imprudent wish to build down to an excessive depth would be a proviso that every building should be properly drained. The material for drains and public sewers should be impervious to air and water. For inverts, good cement concrete seemed most suitable. The purpose of traps seemed very imperfectly understood by those to whom our sanitary legislation was intrusted, and no less so the real object of ventilating the drains and sewers, as was pointed out in various particulars. It seemed to follow, Mr. Boult said, from his reasonings that:—1. Traps should be placed as far as possible from the outfall, and as near as possible to the infall, so that the water discharged may pass away with the utmost possible momentum and velocity. 2. The connexion between the infall and the sewer should be unbroken by any communication with the external air, except the ventilator external to its trap, so that the passage of atmospheric air from the sewer to that ventilator might be as rapid as possible. 3. Wherever practicable, the pipes which convey the refuse into the drains should be used for ventilation. Even where the water discharged through a ventilating-pipe from the roof, or from a lavatory, was but small, it was still useful, because descending in a spray, like lead in a shot-tower, it caused agitation in the air with which it came in contact. He thought every system of drains should be provided with the means of flushing all its branches. The Model By-laws contained two elaborate schemes for the ventilation of drains, neither of which, he argued at some length, was practicable under all circumstances. A careful examination of these by-laws disclosed a compromise between conflicting advisers; thus only could their inconsistencies be explained. The undue influence of members of the medical profession and of other theorists was palpable, and in the interests of true sanitary science itself it was high time architects and engineers should be required to assume their legitimate responsibilities with respect to legislation on such matters.

Plumbers and Drainers.—It was not easy to over-rate the importance of having all plumbing and draining well executed, but under existing arrangements the difficulty of securing good work and material was almost, if not quite, insurmountable. In the United States plumbers were licensed. In Liverpool none but "authorised" master-plumbers were allowed to undertake work connected with the water supply. Mr. Boult thought the supervision of pipes and fittings too minute, but the principle of licensing master-tradesmen for all plumbing and drainage seemed a good one, to which might be added other securities for honest workmanship, such as the compulsory licensing of certain artisans, including plumbers, and foremen, gangers, or overlookers in charge of drainage works. If holders of such licences did, or allowed to be done, any bad or dishonest workmanship, they might be made liable to forfeit their certificates, and even to indictment for misdemeanour.

Modes of Construction.—The provisions for regulating the construction of houses ought not to enter into such details as the ingredients of mortar and concrete. It would be just as reasonable to specify the kind of timber or iron. The Model By-laws and the Metropolitan Building Act omitted all reference to the quality and strength of timber, and there seemed to be the like laxity as to iron. A special tribunal of skilled experts for each provincial district, with a superior court of appeal sitting in London, might be appointed. To these tribunals might be referred all questions as to materials (old and new) workmanship, parti-ownership, ruinous structures, ventilation, and other sanitary questions; possibly also cases of ancient light and air with other easements.*

Classification.—The importance was shown of the distinct classification of buildings of every kind, and of an interpretation clause. The wording of the Liverpool Fire Prevention Acts, passed nearly forty years ago, made illegal the adoption of any of the modern improvements, such as concrete arching, solid timber blocks, or any of the so-called fire-proof iron and concrete floorings. Nor was it allowable for the doors and shutters to be of concrete, indurated fibrous plaster, or other incombustible material except iron. Legislation on such subjects ought to be tentative, progressive, and uniform throughout the kingdom.

Walls.—The rules for determining the thickness of brick walls, as given in the Metropolitan Building Act and the Model By-laws, seemed very complicated, and capable of being greatly simplified. The obvious principle was that, other things being equal, the thickness of walls should be in proportion to the height; but warehouses, being exposed to much rougher usage than dwellings, their walls must be stronger. Provision should also be made for the exceptional contingencies to which many public buildings were exposed. Mr. Boult endorsed the rules in the Metropolitan Act for roughly adjusting the increase in strength of cross-walls in proportion to the distance between them.

Ruinous Structures.—Though the powers conferred upon local authorities under the Metropolitan Building Act, which were very similar to those given under the Towns Improvements Clauses Act, 1847, had long been found sufficient in the metropolis, the Liverpool authorities had actually desired to compel the justices to order the demolition of a structure on the *ex parte* information of their own surveyor, without allowing the owner to challenge his judgment. This was another illustration of the dangerous tendency in authority to become autocratic.

Projections.—The rules limiting the projection of architectural and other features laid down in the Metropolitan Act seemed too stringent. Alternative rules were suggested.

Exempted Buildings.—The *trinodas necessitas*—stability, security from fire, healthiness,—required for all other structures, ought to be imperative upon the exempted buildings also.

Plans.—One of the strongest instances of the bureaucratic spirit inspiring the Model By-laws was to be found in the requisitions for plans and other drawings for intended streets and buildings. It was very much to be regretted that the extremely moderate suggestions for their amendment which emanated from the Institute of British Architects were not accepted by the Local Government Board. It was lamentable to see any department descending to such petty inquisitorial details,—a proceeding more like the officialism of some small foreign State than the reasonable requirements of a constitutional Government. Nothing more conclusively showed how much some influential persons had lost discretion under an irrational panic and its offspring, a no less irrational mania. Every local authority ought to possess a plan of its district, such as is described in the Towns Improvement Clauses Act, 1847, for which a scale of 60 in. to the mile is specified, reference to which would render needless many vexatious requirements, such as were copiously exemplified under this head.

Surveyors of Buildings.—In the appointment of surveyors to assist the local authority in enforcing the provisions of a General Building Act, there should be a better guarantee for their competency. There were cogent reasons against the management of local affairs by a Government department exclusively, but a blending of the imperial and local systems could be so adjusted as to be highly beneficial. Mr. Boult's preference was in favour of the system which had long prevailed in the metropolis, and was apparently justified by results. In very populous districts more than one surveyor would be required, whilst, where there was little building, districts might be grouped together. In any case, the gentlemen selected should hold certificates of competency from the Institute of British Architects. In winding up his paper, Mr. Boult reminded his audience that the enactments reviewed were meant to confer on the local authority great powers for the public good, but the manifest lack of what lawyers term reciprocal covenants led one to ask, *Quis custodiet custodes?* In the interest of the public health, and on other grounds, a simple and inexpensive method of bringing peccant authorities to book was an absolute necessity. For, however perfect, structural and sanitary enactments were utterly worthless if not enforced with uniformity, impartiality, and intelligence. Expressing his full appreciation of the distinction of having been asked to undertake the task he had now completed to the best of his ability, the author trusted that any omissions or defects in his tentative essay would be largely rectified in the discussion. If a uniform system for regulating the structural and sanitary

* Mr. White observed, in reference to this matter, that he had just received from Paris the *Bulletin* of the Société Centrale des Architectes, in which there was printed a Decree of the Republic promulgated on the 6th of January last, appointing a council, which would take the title of "Council General of Architecture." The council was composed of architects and inspectors-general of civil buildings, historical monuments, and diocesan edifices. By Article IV. it was to be entrusted with the examination of all questions (*contentieux*) arising in the practice of architecture and building-surveying; was to give advice, notably upon competitions and their conditions, strikes and wages disputes in the building trades; was to approve of the prices (*séries prix*) for building work done for the State; was to fix the rates of architects' commission and to interpret existing charges; and was to investigate the claims of all new materials and inventions connected with building, methods of artificial lighting, the prevention and extinction of fires, &c. There were, said Mr. White, in conclusion, other articles in the Decree, which, as a whole, served to show that the French, whether they lived under Monarchy, Republic, or Empire, were generally ahead of us in such matters.

arrangement of buildings was essential, the first step was to determine the principles on which that system should be framed, and to these he had sought to direct attention.

In the discussion which followed,

Mr. Gordon Smith, Architect to the Local Government Board, said that while Mr. Boult's paper contained much with which he cordially agreed, it contained a great deal with which he could not agree. Mr. Boult had taken exception to some of the Model By-laws issued by the Local Government Board, but was apparently unaware that they were based on the requirements of the Public Health Act. Mr. Boult seemed to have overlooked the fact that the by-laws were intended to be progressive, and to meet the wants of buildings not yet erected. As to Mr. Boult's contention that it was unnecessary to require that water-closets should be placed against external walls, he (Mr. Gordon Smith) was quite prepared to maintain that the requirement in question was a most necessary and important one.

Mr. Lacy W. Ridge spoke of the unnecessary demands made upon architects by the by-laws of local Boards for complete sets of drawings, and related how, on a recent occasion, he had not only declined to comply with such a demand, but had so fully convinced the Board that it was unnecessary and unreasonable, that in future such demands would not be made, at any rate by the Board in question, on other architects. In too many instances sets of drawings sent in compliance with local by-laws were merely pigeon-holed by the surveyor,—not, it was to be hoped, with the intention of ever using them for his own purposes. In conclusion, Mr. Ridge moved a vote of thanks to Mr. Boult for his paper.

Mr. E. C. Robins, in seconding the motion, said the paper contained a great deal of valuable and suggestive matter for contemplation, and he had no doubt that if the discussion were to be adjourned, a profitable evening could be spent, and perhaps Mr. Gordon Smith would be able to attend again and enter more fully into the matter than it was then possible to do. He thought that the majority of the members of the Institute might disagree with Mr. Boult on some points, but he thought they would agree with him in the main.

Mr. White moved, and Mr. Macvicar Anderson seconded, a vote of thanks to Colonel Prendergast for having assisted in the reading of the paper.

The Chairman said he certainly could not agree with Mr. Boult in his apparently depreciatory remarks about damp-proof courses. This was a matter to which he (the chairman) had paid very great attention, and he not only was prepared to insist upon horizontal damp-courses, but, in certain cases, upon vertical damp-courses, formed by leaving a cavity in the wall and filling it with asphalte as the work proceeded. He had repeatedly tested the efficacy of such a method of construction. One instance was in the offices in Scotland-yard for the Ecclesiastical Commissioners, built by him about five-and-twenty years ago. There they had to go down about 25 ft. through a mass of what was little better than Thames slush. The deep basements there were found to be perfectly dry, and were used, not only for storage purposes, but for some of the departmental work. He might say that in this case the outside wall was 14 in. thick, the inside wall 9 in. thick, with a 2-in. cavity between them filled with asphalte, which held so tenaciously to the brickwork as to unite the two walls into one solid structure.

The discussion was then adjourned.

THE SURVEYORS' INSTITUTION.

The Students' Preliminary Examination for 1882 was held in the Hall of the Institution on the 24th and 25th ult. The passing of this examination is the condition of enrolment in the class of students. Of the thirty candidates who entered, the following, whose names are given alphabetically, satisfied the examiners, viz.:—

F. A. Bonter, London; E. V. D. Bousfield, London; W. G. R. Bousfield, London; J. G. Bryans, Sunderland; A. Brymer, London; S. Clarke, London; W. T. A. Cross, London; W. Day, Maidstone; H. A. Drew, Exeter; R. G. Grey, London; L. G. Hasiuk, New Barnet; G. A. Lansdown, Wimbledon; H. E. Moore, London; J. H. Moyes, Ely; W. G. S. Rolleston, Leicester; R. C. Rundle,* Tavistock; F. W. Welch, London.

These candidates will be expected to present themselves for the final (technical) examination at or near the close of their student course.

* Passed at the head of the list.

A CHAT WITH YOUNG ARCHITECTS ABOUT SPECIFICATIONS.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association, held on Friday, the 3rd inst., Mr. Aston Webb, president, in the chair, several gentlemen were nominated for election as members.

With regard to the Saturday afternoon visits to buildings in progress, Mr. W. H. Atkin Berry, one of the hon. secretaries, gave notice that all members who wish to be present on those occasions must provide themselves with passes (for the *current* session), and must be prepared to produce them when called upon. Any member may obtain a pass on application to either of the secretaries.

Mr. Ewan Christian then proceeded to give an address (more especially to the junior members of the Association) on the writing of specifications. He said that when asked to give a lecture on the subject, it at once brought to his mind very vividly the recollection that specifications were one of the bugbears of his youth. He remembered perfectly well, though it was not less than fifty years ago, the horror with which he once regarded a specification, and he recollected speaking to the elderly gentleman who was at the head of the office in which he was articled, and asking him with great trepidation whether he should ever be obliged to write such documents, which appeared to him then to be unintelligible pieces of jargon. He was a cheery old fellow, and he made reply, "You never know what you can do till you try!" And so he had found. And it was also true that one never knew what he could *not* do until he had tried and failed. His subject was "A Chat with the Younger Members of the Association on Specifications," and he proposed, firstly, to say a few words on specifications in general; secondly, to take up one in particular and go through its general provisions; and afterwards to make some few observations on some methods of acquiring the necessary knowledge for writing such documents. Possibly some of his young friends might think he had chosen a very dry subject to discourse upon, and his elder brethren might deem him a bore for talking about an everyday business of which they probably knew as much as himself. He must ask the forbearance of both, and would endeavour, in the treatment of his theme, neither to be dry to the young nor wearisome to their elders. Now, in the carrying out of an architect's design, the specification, properly considered, was the very pith and marrow of the building operation. The first sketches might be said to represent the poetical or inventive part of the work; the working drawings and the specification, which should always go hand in hand, were the hard and laborious filling-out and filling-in of the first ideas, and each would have its compensation for the man who really loved his work, and who was content to carry it all through by himself. It had fallen to his (the speaker's) lot to read many specifications from many hands. The much-lamented President of the Institute, Mr. Street, had very truly said that an architect was known by the work he executed, and so, also, something about him could be known by his specification. He would describe some with which he had made acquaintance. First, there was the careless specification, the production, possibly, of the man who thought his art so high that he could not condescend to things so low, and so gave himself no trouble in the matter, wrote in the loosest possible fashion a few vague sentences, and necessarily, in consequence, ran the risk of heavy bills for "extras," and of giving much general dissatisfaction. He hoped there were no such specification writers present. Next, there was the uncertain specification, from the man who, not knowing his own mind, left everything vague, and said that such and such things were to be done "as the architect may hereafter direct," or that everything was to be done that was or ought to be necessary for the completion of the work, whether mentioned or not. But what was the poor builder to do in making his estimate from such a document? What a chance for wild estimates and after-litigation! Then there was the surveyor's specification, which he always knew by the clause, "Provide water for the work,"—as if it could be done without water! If everything had to be provided, why should water be so specially mentioned? This was generally a practical and dissecting specification, but with no warmth or geniality about it. Then there was the muddled specification, which it was a positive torture to read, and in which one had to hunt through page after page to find the proper sequence of things, and, when found, had sore trouble to put them together. Then there was the too-diffuse specification,—that which said, over and over again, that this thing and that thing were to be provided and done in the best possible way, when one clause to that effect would be sufficient. Such a specification was a trouble to read, but one forgave its wearisomeness in respect for the earnestness of the writer. Next, there was the plain and practical specification, which went straight to the point it was intended to reach, and said exactly enough, and no more,—the writer being evidently a good business man who did his work thoroughly well, wasted no time, and had no difficulty in settling his accounts at the conclusion. Lastly, there was the well-written and properly descriptive specification, the writer of which evidently enjoyed his work, wrote it *con amore*, revelled in the pictures he summoned up as he went on, and filled his pages with sketches to illustrate his words. Such specifications were a real pleasure to read, because one saw that the writer was brimful of happiness in doing his work, as all ought to be if their work was to be done really well. Now, these were not fancy pictures, for he could fit most of them to practising architects, but he only quoted them as illustrations of the fact that specifications were not necessarily dry, and were certainly not wanting as indications of character. But now, to take a more serious and, he hoped, instructive view: What was a specification, and who could write one so that it should be useful? Let them consider the ordeals which the document had to encounter. First of all, it had to satisfy the client,—not, possibly, for his own reading, but to defend his interests in the work which the architect had been entrusted to do for him. It should be remembered that clients sometimes attached strange meanings to doubtful descriptions. Secondly, it had to be put before the builder, who, if he were an honest man, would do his best to carry out its provisions faithfully and well; but if he were a scamp, he would try to evade them at every turn, and would be sure to go through any loop-hole that had been left. Thirdly, it had oftentimes to be interpreted by workmen; they might be intelligent or they might be the reverse, and then, woe to the man whose work was slightly done. It was all very well to put in a clause that the architect was to be the sole judge of everything; so he ought to be, but if he had left room for misinterpretation, and mistakes were consequently made, as an honest man he ought to decide against himself, and not blame the workman. Lastly, together with the drawings, the specification had to be the basis of a contract. Some employers, and possibly some architects, thought that the contract was the lawyer's work exclusively, and that he was to be responsible if anything went wrong; but he (Mr. Christian) said "No!" The lawyer might put in his stringent clauses, might provide for bondsmen, and set down penalties to be exacted in due course; but if the specification was imperfect, the foundation of it all was rotten, and all the legal phrases in the world would not make it stand. Not that he despised the lawyer's work,—far from it; it might be, and was, in many cases, very necessary, but the specification and the drawings were the real basis of contract, and the general conditions might be fairly left to the lawyer, though not even those without the architect's co-operation. A specification, then, was, or ought to be, a document which should fully and completely describe the architect's intentions, illustrated by the drawings, of what was to be done from the time of cutting the first sod to the delivery of the key of the finished work into the owner's hand. That was what a specification ought to be. Who was the man who could write it? "Oh," perhaps some of his hearers would say, "the surveyor; he is the man who must know all about it; he dissects the work, describes its bones and sinews, and clothes them with flesh, and so in due course it comes out all right from the builder's hands." But, did it? And whose, then, was the work? At best it was but a partnership concern. No; if his young friends had learned the surveyor's work in addition to their own, by all means let them do it,—nothing was more practically instructive, but if not, let them never, in their younger days, depute the writing of their specifications. If they could not do it themselves they had not learned their business perfectly, and ought not to practise it, because

they could not do their employers justice. It would be plain, therefore, he (Mr. Christian) thought, that so far as his judgment went, the person who wrote the specification should be he who designed the work; and so far as regarded its chief points,—those in which his design was out of the ordinary track, where individuality was to be exemplified,—so it must be to his life's end. He wished it to be remembered that he was speaking to young men, who had yet to win their spurs by hard and resolute work. When they were older they might shorten their labour to a great extent by the assistance of others; but to do so effectively, and to depute with propriety, they must be masters of the work in all its details. Again he would ask, Who was the person who could write a specification? Not the careless man; not the man who was vague and did not know his own mind; not the man who, like Nebuchadnezzar in his dream, expected the builders to interpret what he could not himself describe; not the muddle-headed man, for the sooner that gentlemen left the architectural profession the better for himself and for everybody else. Lord Bacon, amongst his many wise words, said, "Reading maketh a full man; conversation, a ready man; writing, an exact man," which might be thus paraphrased to meet the special requirements of the architectural profession: "Reading makes the full man; sketching, the ready man; specification-writing and drawing, the exact man"; and an architect's work, if it was to be worth anything at all, must needs be exact. The essential elements of specification-writing, then, were:—knowledge, not only of theory, but of practice; method; conciseness; clearness of description; and thoroughness. Now, in that view of its requirements he would take up the second part of his subject and go through a specification. Time would not, of course, allow him to speak about every detail, and it would be wearisome rather than profitable if he were to attempt to do so. Minute detail was the subject for the class, and he would, therefore, so far as possible, confine his remarks to general principles and points of importance, and would take up the work of building in the regular order according to which it would ordinarily proceed from the foundation to the finish. It should always be remembered that a specification could never be properly written as a thing apart. Drawings and specification should advance together; and there was nothing more useful than for the architect to have his specification headings all prepared, and, as his drawings proceeded, to note for each trade what he found it necessary to describe in writing. He might, if he preferred (and it was an exceedingly good practice), make his drawings themselves the vehicle for much of his description, and so lessen the bulk of his separate writing, but, nevertheless, this practice would not supersede the general notes, because some things must be described which could not be represented on drawings. Now, inasmuch as it was probable that for one man who might be called upon to erect a public building or any other large structure, fifty might be asked to design and build a house, he would base the remainder of his remarks on that probability, and as briefly as possible show what had to be done. He would take the case of a house in the country, on a moderate scale, because it would be pleasanter for them to go into the fields than to bother themselves with all the difficulties of town building, such as the rights of light, the district surveyor, the Metropolitan or local Boards, and all the other ills to which town architects were heirs. Not that such difficulties were to be shirked when it was necessary to meet them. The house he would suppose to be built of brick, and, in spite of "Queen Anne," it should have, for the sake of illustration, some stone-mullioned windows, and might also perhaps indulge in some of the fine Dutch brickwork now so fashionable. But let them not forget, as they proceeded, another of Lord Bacon's wise sayings,—one which ought to be printed up in every architect's office,—viz., "Houses are built to live in, not to look on." He would presume that the architect of the house had duly inspected the site before preparing his design (a matter which should never be neglected); that he had noted its requirements; made out all about water-supply, drainage, &c.; tested the nature of the subsoil, &c.; learnt all that he required to know as to materials, carriage, &c.; and had settled where the garden was to be. Then would come the consideration of the *Excavator's Work*. This was most important, for the excavator was the man who found out what the architect was going to build upon. But it should be remembered that the excavator might go too deep as well as not deep enough. On clay such as had to be built upon in the neighbourhood of London, it was necessary to provide a broad and deep foundation. It was very often a dreadful material to deal with, but there were cases in which it was the best possible friend the architect could have; for instance, it was sometimes found that a bed of clay overlaid an untold depth of silt, and if the excavator were allowed to remove that bed of clay he ruined the site, so far as regarded its capacity for building, or at any rate he entailed an enormous extra expense upon the building owner. Hence the work of the excavator should be carefully considered by the architect, and should not be dismissed in a summary manner, as was too often the case. Sometimes, the site of a building was covered to some depth with vegetable soil. The excavator was often directed by the specification to take a foot off the surface in such cases, but that was frequently not enough; because if any part of the soil over which a building was erected contained vegetable growth, dry rot would be liable to assert its destructive and insidious power. He seldom saw in specifications any provision for removing the ground excavated to such position outside the walls as to form terraces or other features of the garden. Forethought in regard to this matter would cause proper instructions to be given to the excavator as to the disposal of the earth excavated. Instead of specifying that it was to be wheeled so many "runs" from the house, the particular spot or spots should be specified. Of course, if the foundation were a bad one, the architect would have to specify concrete, but he should carefully consider the kind of concrete which it would be best to use, in view of the nature of the soil and the qualities of the materials available. Whenever they were building on clay, his advice was never to use anything but lias lime or Portland cement concrete. He need hardly add that if a well had to be provided it should be kept away from the drains, especially in sandy or gravelly soils. With regard to the work of the *Bricklayer*, it ought never to be forgotten that brickwork should vary in its mode of execution according to the season. Consequently, a specification for brickwork to be executed in the summer should differ in its wording to one for brickwork to be done in the winter. For instance, it would be dangerous to use the same quantity of water in building walls in winter as in summer. In summer a great deal of water might be used,—the more the better, and the wetter the season the better. Walls should also be thoroughly grouted in the summer, but during four or five months of the winter not a drop of grouting should be used. A damp-proof course should, of course, be provided, and if it was desired to secure basements which should be of value, because dry, for storage purposes, a vertical damp-proof course should be provided to any height required, in addition to the usual horizontal damp-proof course. Such vertical damp-proof course might be made in the following way: The walls, above the horizontal damp-proof course above the footings, should be built hollow, say with a 1½ in. or 2 in. cavity, but not bonded together by ties of any kind. The cavity should be completely filled in, as the work proceeded, with boiling asphalte, which when cold and hard would hold so tenaciously to the brickwork as to form, with the outer and inner brickwork, a solid wall. Where necessary, this vertical damp-proof course should be carried up all through the basement-wall to the underside of a second horizontal damp-proof course placed just above the ground level to protect the floor on that story. A great deal was said in specifications about the quality of bricks, but why not shorten the expression now used by having a clause to the following effect:—"For walls, hard, sound, well-burnt bricks are to be used, and no others shall be suffered to come upon the ground"? The specification should, of course, be very clear as to the mortar and its ingredients. In country places, where river sand was not always easily procurable, pit sand was used, and sometimes road-drift, which, when collected from flint roads, made very good mortar, but it should be collected as long as possible before use, in order that the filth contained in it might be thoroughly washed out. He was a great advocate for the use of hollow walls, on account of the dryness and warmth which they ensured, but they required to be built with very great care. He sometimes saw hollow walls so drawn as that, while the central portions of the walls were hollow, at the window openings and at the quoins they were solid. Through these strips the wet would drive, and the walls would always be damp there. Some people recommended that hollow walls should be built of 4½ in. work outside and 9 in. work inside, and theoretically they were right, because practical requirements, such as strength to bear the superincumbent floors and the roof, made it desirable to have the thicker walls inside; but in such walls the use of anything in the shape of iron ties could not be too strongly deprecated. Iron ties so used speedily decayed by rust, and then the whole structure on which they depended became as rotten as a pear. The best thing in the way of hollow walls was a double thickness of 9 in. work, with a 3 in. cavity between, the walls being bonded at short intervals with continuous courses of brick impervious to moisture. A wall, 1 ft. 9 in. thick, built in this way, combined the advantages of a solid wall with those of a hollow one. Such a wall was the driest and best that could be built, and it had another advantage of no small importance. Having to build a large house in the country, in which all the external walls were to be constructed in this manner, it so happened that he could not get the external stonework in time. He, therefore, determined to build the inner parts of the external walls first, in cement, with the bonding courses projecting out all the way up. By this means he had got the roof on, the floor joists laid, and could get the internal work generally well forward, and he was going at his leisure, when the stone was ready, to build the outside parts of the external wall. Thus time would be saved, and his client would be able to enter upon a perfectly dry house as soon as the work was finished. In smaller hollow walls, obtained by 9-in. and 4½-in. thicknesses, iron bond must be used, but it would not do merely to specify, as was too often done, that the hollow walls were "to be properly bonded by iron." Such a stipulation would lead the builder to say, "Oh, hoop-iron will do for them." But it would not do. The specification should state how many pieces of bond were required, their dimensions, distance apart, &c. This point was one of many which illustrated the extreme importance of architects making the descriptions in their specifications in every respect absolutely accurate. It was only fair to the builder that he should be told before he began his work what he was expected to do. If an architect desired to go upon the modern principle of ventilating the space under floors, with the view of preventing dry-rot, such ventilation should be thorough. It was often specified that air-bricks should be inserted in the walls beneath the floor, but perhaps only six were named for a whole house. To place one of these small openings here and there was absurd, for, however disposed, they were so few in number that they must leave a considerable area of the under side of the joists and boards in corners and recesses unventilated, and therefore liable to attacks of dry-rot. Dry-rot was a foe to the architect and builder which could not be too strictly guarded against. In sleeper walls there were generally a great many bricks wasted. They could be built pigeon-hole fashion with equal strength, and if so constructed would permit of the freer circulation of air beneath floors. He advised his hearers not to put impracticable clauses in their specifications, such as "Every brick used is to be a whole brick." When he saw that clause he was quite sure that it was written by a young man. While, in foundations, such a clause might fairly be insisted on, for the walls above ground there must be used what bricklayers termed "closers." There was no necessity to have so many solid bricks if the bond were good. Another clause often seen in specifications was to the effect that "every fourth course is to be grouted." Why only every fourth course? If bricks were properly bedded, such a clause must needs be absurd. The now fashionable brick facing-work, very finely and smoothly jointed in putty, might be pretty, but it was hardly brickwork, for unless the backing were to be set in Portland cement it could not be made sound. Mortar could not be used for the joints, because if of sufficient thickness there would be unequal settlement. The best brickwork that could be seen anywhere in the world was that of the Romans, which was

characterised by good thick joints of honest sort of stuff in the shape of mortar that was not afraid of coming to the surface. The brickwork introduced by Dutch William was not brickwork at all; it was toy-work, and inconsistent with sound building. He was supposing that the house which he was taking as an illustration was built in the summer, and therefore that all the joints were finished as the work proceeded, so that there was none of that horrid after-smearing with black pointing which was so much to be condemned. The proper building of the flues and chimneys was an important point, practically and artistically. He thought that any architect who so ill-designed his chimneys that they needed the aid of "tallboys," cowls, and other monstrosities to enable them to do their work, was a discredit to his profession. It was perfectly easy to build them so as to carry off the smoke perfectly. In a house of any size, while the architect was planning his chimneys, he should not forget to provide a spare flue or two. If they were not used as chimneys, they would often be found very useful as ventilating shafts to carry off heated air. Speaking of chimneys, on the outside of the roof they should always be provided with a damp-proof course worked in just above the tiles. Being only of 4½-in. work, unless protected in this way the water would soak down and damage the ceilings and walls of the upper rooms. Between the months of October and March chimneys above the roof should always be built in cement. The subject of *Drainage* was often dismissed in a sentence or two in a specification, but the drainage works of a building should be described with the greatest possible particularity, and their execution looked after with the same degree of care. One very important clause which it was desirable and necessary to insert in a specification would commend itself to all who knew the extent to which each individual tradesman employed on a building felt himself at liberty to destroy or injure the work that had been done by others. It was to the effect that the contractor should suffer nothing to be done to the neglect or injury of the appearance or stability of any brickwork or other work, and that he should allow no damage to accrue to the job through the inadvertence or carelessness of other tradesmen. With regard to the work of the *Mason*, it was a common clause in specifications that the stonework was to be tied together with iron cramps and dowels everywhere. The first question that had to be answered before such a clause was written was, Were the dowels and cramps necessary? In his opinion, they were not. Indeed, he was firmly convinced that more often than not they were absolutely injurious to the work. He had seen a good deal of old masonry, and had seen very few iron cramps except where the work had failed in consequence of their use. Masonry might be joggle-jointed securely with sharp pebbles, but the use of so perishable a material as iron for cramps was highly objectionable, for owing to swelling caused by the oxidation of the metal it burst the stonework, as was to be seen in classical churches and other buildings. With regard to the work of the *Carpenter*, a good rule to remember was never to put a piece of timber into the walls which could be kept out of them. Very frequently, he was sorry to say, he had drawings sent to him in which the ends of joists were built into the walls close to the ground-line. It was a capital plan, when building in very exposed positions, and where stone was available, to use a good corbel-course, formed of stones going right through the walls of the outer face, but forming a projecting ledge inside, on which the floor-plates could be placed. Such a corbel-course, when used to carry the plates of the upper floors, could be made to form a good architectural feature in the shape of a cornice to the room below. In regard to roofs, it was frequently specified that the gutters were to be laid "with all necessary falls and drips." It would be just as easy to specify the exact extent of fall and drip required, and yet architects of large buildings were content to use such a vague clause as the one just mentioned. With regard to roof coverings, he agreed with what had been said at the previous meeting as to the superior warmth and comfort of tiles. The roofs of houses, and of churches more particularly, were but too often inadequate to properly protect the buildings which they covered from the extremes of hot and cold. People, when they were building a church, with its substantial walls and solid piers, never thought of adequately covering the building, but frequently put a thin roof of slate or tiles, boarded on the under side, over it. It was futile to expect to warm a building so roofed. He was a strong advocate for hollow roofs, *i.e.*, roofs in which a space or spaces could be left between the outer and inner surfaces. A great deal could be done in this way in a very small space. If the space between the outside of the roof and the ceiling or interior surface could be divided laterally so as to form two or three air-spaces, so much the better. For such internal division a thatch made of straw, or, preferably, of Norfolk reeds, could be used, and nothing could exceed the warmth and comfort of such roofs. Tiles were greatly to be preferred to slates for covering, not only on account of their superior warmth, but because if one got broken or displaced another could be slipped in easily, but to replace a broken slate it was necessary very often to strip off a large number, which was an expensive process, owing to the liability of breakage of old slates at the nail-holes. When the architect was specifying his *Joiners' Work*, he should mentally go into every room of his building and see what its requirements were, utilising every nook and cranny to the best advantage. It was a very important matter to have all joinery and woodwork prepared in advance, and of well-seasoned wood. There was one point in connexion with this to which architects did not give sufficient attention, and that was as to the proper time to put the joinery work into a building. It was very destructive to put well-seasoned joinery into a building the brickwork and plaster of which was reeking with moisture, for, however well-seasoned the wood used under such circumstances might be, it would inevitably absorb some of the moisture and swell, and then, when the building got dry, would shrink and gape at the joints. Builders, owing to this, were often unjustly blamed for using unseasoned timber, but the real cause of its shrinkage was undue haste and disregard of season in building. Good building could not be done hurriedly and without regard to season. The man who wanted a house well built should get his brickwork up and the roof on by the end of October. The building should then be left to stand in carcass fully exposed to draughts until March or the beginning of April, when the plasterer should come in, and after his work was dry the joinery could be put in and the house be properly finished and dry and fit to live in by August or September. It was a common stipulation in specifications that all wood was "to be clear of sap," but this was not always strictly interpreted to mean what it said, and he had found it desirable in his specifications to add a note or memorandum to the following effect:—"It is to be clearly understood that this clause means what is expressed therein, in a sense rigidly exact, and that all sap-wood is to be cut out in whatever form it may appear." With regard to floors, he never returned from a journey on the Continent without being disgusted with the floors to be found at home. It was an extremely rare thing to find a decent floor in England nowadays, but on the continent and on the other side of the Atlantic such a thing as a bad floor was rarely seen. People in England had been spoiled by the rage for building houses cheaply, and they had in consequence to be content with floors which they were obliged to cover up with carpets. The Americans knew what good joinery was, and all the floors of their good houses were laid upon the following principle:—They covered the joists with ordinary boards as a foundation, and over these they put a superior floor covering, not necessarily parquetry, but of well-prepared boards, without a particle of sap, and without a single nail being visible. For the first twelve months they were simply tacked, as it was termed, to the boards beneath them, and were afterwards nailed down through the edges, so that the heads of the nails did not appear on the surface. We could not show such floors, unless we used parquetry. He understood that the late Thomas Cubitt used the method of flooring just referred to. One very important point that should never be neglected in regard to ground floors was to see that every particle of wood-shavings and sawdust was removed from the surface of the ground, for where the ground was damp or likely to become so, shavings and sawdust would afford a rearing-place for dry-rot, which would grow and spread over the whole of the joists and the underside of the boards. With regard to *Plumber's Work*, many important public and other buildings had a great deal of money expended upon them for ornamentation in the shape of moulded and carved work, while at the same time cast-iron eaves gutters, rain-water heads, and down-pipes were used. Iron used for such purposes would not last half a century, even though continually painted. Wherever possible, lead should be used instead of iron. It was capable of very artistic treatment, as could be seen in many old examples, and it was undoubtedly a correct principle that utilitarian features such as he had mentioned should be made ornamental. After passing in review the work of the painter, glazier, and other tradesmen, and the way in which it should be specified to be done,—instancing, *inter alia*, the way in which workmen not only in these trades but in other trades would sometimes play tricks in order to bring discredit upon the clerk of works or foreman,*—Mr. Christian concluded his address by urging upon young architects the importance of giving time when they were young to mastering all details of practical construction, so as to enable them to write or dictate the terms of their own specifications. Unless they mastered these details when they were young they would be bunglers all through their career. He strongly advised young architects who were qualified to act as clerks of works to give two or three years of their early career in superintending, in detail, the erection of buildings, and ridiculed a young man who, while he thought he should like to do that kind of work, "did not want to do anything unbecoming a gentleman," explaining, on being questioned, that he meant he "should not like to do anything in which he could not wear gloves." (!)

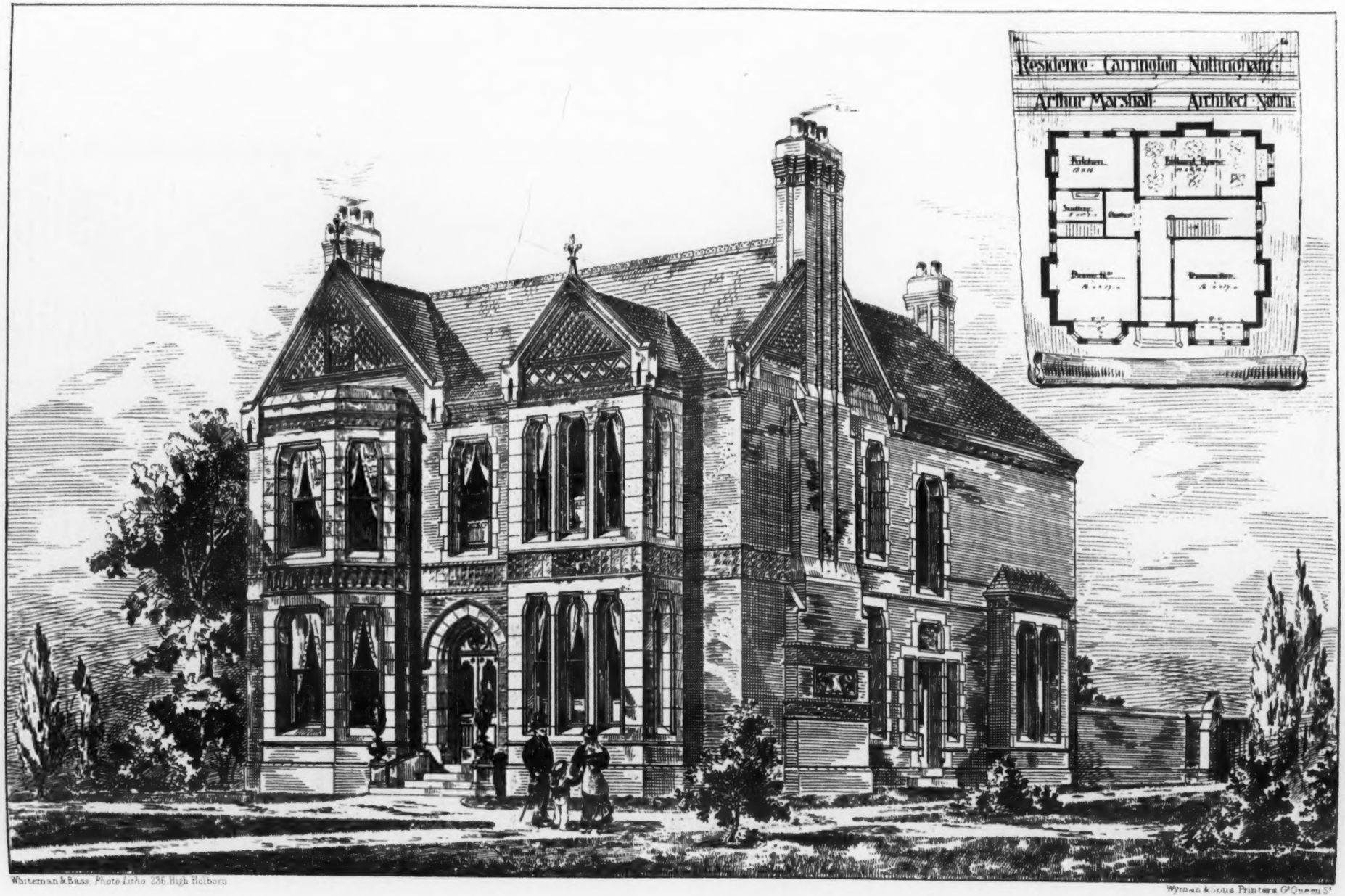
Mr. Christian's address, which was interspersed with several amusing personal reminiscences, and which made allusion to a great many points of detail which want of space precludes us from noticing, was not concluded until an unusually late hour (for the Association), and there was only time for a very brief discussion, in the course of which Mr. Pink moved a vote of thanks to Mr. Christian, and this being duly seconded and carried, the meeting terminated.

SOCIETY OF ENGINEERS.

The first ordinary meeting of the Society of Engineers for the present year was held on Monday, the 6th inst., in the Society's Hall, Victoria-street, Westminster. The premiums having been presented, Mr. Jabez Church, M. Inst. C.E., the newly-elected president for 1882, delivered an inaugural address. He especially touched upon those branches of the profession with which his own practice is more immediately connected, viz., sanitary engineering and gas and water supply. With regard to sanitation, he remarked that that subject was in the past a matter which was considered to be more or less beneath the dignity of the civil engineer, and utterly unworthy of the consideration of the general public; but in these days it is found a distinct branch of engineering science, and the public took a keen interest in sanitary matters. Mr. Church referred to the pollution of the Thames at the sewage outfalls, and expressed his opinion that before long some steps must be taken to improve the sanitary condition at this part of the river. With regard to the London water-supply, he thought the sooner the Government took the matter in hand the better, as the value of the companies' property was steadily on the increase.

At St. Alban's Abbey, a few minutes before the commencement of afternoon service on Sunday, the 1¼-ton weight of new chimes fell a distance of 24 ft., on to the lower ceiling. The ceiling was not pierced by the weight, but one of the painted panels was splintered, and several pieces of wood fell into the body of the church. One person received injury to the skull, and another an injury to the arm. In consequence of the accident, neither an afternoon nor evening service was held. The new chimes were erected only last summer. They fell owing to the wire attached to the weight giving way on Sunday.

* One flagrant instance cited by Mr. Christian was that of a few bricklayers, who, in order to spite the clerk of works (who had been very particular about the construction of a flue in a lofty tower), surreptitiously returned to work for an hour or two after all the other workmen had left, and built in, right across the flue, a stone landing, the trick not being discovered until the building was completed. It is satisfactory to know that, as Mr. Christian observed, all British workmen are not of this type.



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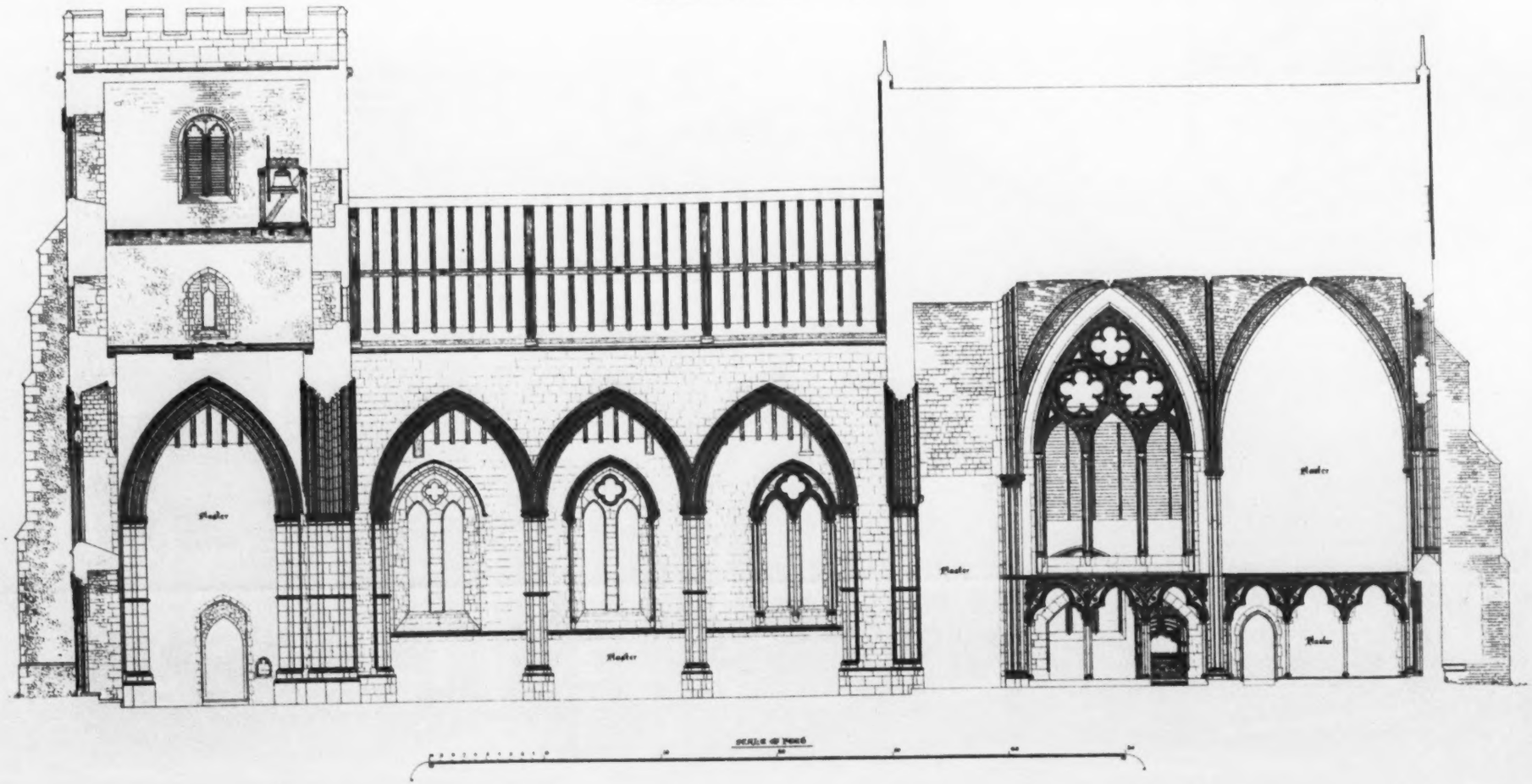
CHURCH OF S. MARY STONE Kent

LONGITUDINAL SECTION



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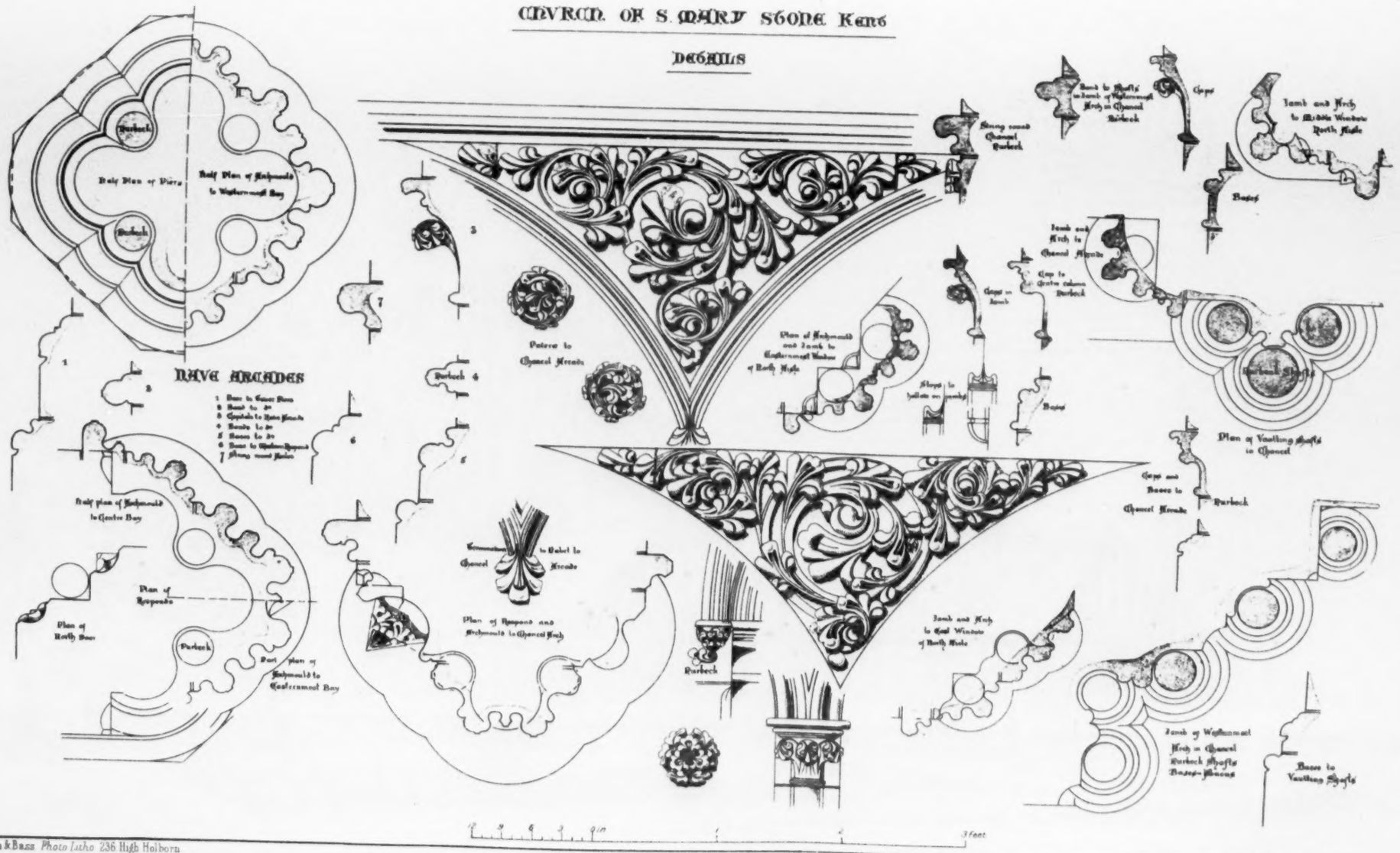
ROYAL ACADEMY SILVER MEDAL AWARDED 1881.

To W. B. BASSETT-SMITH.

THE INTERIOR OF THE CHURCH OF SAN JUAN DE LOS REYES, TOLEDO.

CHURCH OF S. MARY STONE Kent

DETAILS


NAVE ARCADES
Half Plan of Pier
Half Plan of Responds to Westernmost Bay
Half plan of Responds to Centre Bay
Plan of Responds
Plan of North Bay
Part plan of Responds to Easternmost Bay
Plan of Responds and Arch moulds to Chancel Arch
Plan of Responds and Jamb to Easternmost Window of North Aisle
Plan of Vaulting shafts in Chancel
Jamb and Arch to Chancel Arcade
Jamb and Arch to Middle Window North Aisle
Jamb and Arch to East Window of North Aisle
Jamb of Westernmost Arch in Chancel
Bases to Vaulting Shafts
Purbeck
Bases
Caps
Caps and Bases to Chancel Arcade
Caps to Centre columns Purbeck
Stone to radiate on curve
Patera to Chancel Arcade
Springer to Label to Arcade
Springer round Chancel Purbeck
Label to Chancel Arcade
Label to Chancel Arch
Stone round Chancel Arch
Stone to Chancel Arch
Stone to Window Square
Stone to Window Splayed
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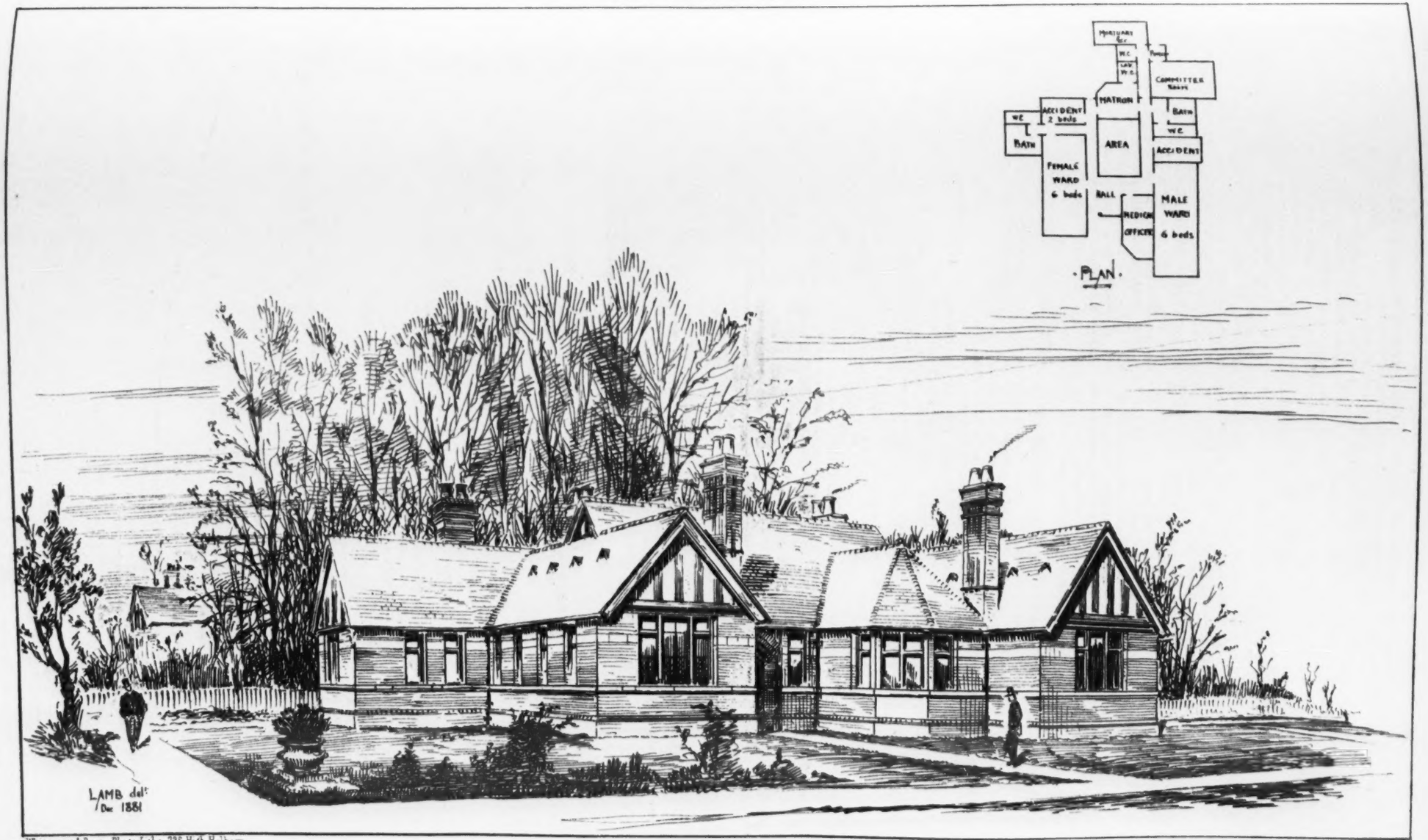

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COTTAGE HOSPITAL, NEAR WHITBY.—Mr. Thos. Miller, Architect.

INTERIOR OF THE CHURCH OF SAN JUAN DE LOS REYES, TOLEDO.

THE Church of San Juan de los Reyes, on account of its architectural characteristics, is looked upon as the most interesting edifice devoted to public worship in the imperial city of Toledo, next to its magnificent cathedral. It forms an annexe to the monastery of the same name, and was erected during the reign and by order of the Catholic kings, who presented it to the community of Franciscan friars,—end of the fifteenth century. The interior of the church (of which we give a view in our present number), as well as its sumptuous portal, designed by Covarrubias and completed in 1610, is a good example of the styles which prevailed in Spain at those periods. The Church of San Jerónimo del Prado, which still exists in Madrid, although in a ruinous state, offers in its architectural lines many related features to the Toledo edifice. The cloisters of the convent are mentioned as marvels of art; unfortunately they were totally destroyed by fire in 1808. Serving as a record of the times in which it was erected, the façade of the church is adorned by a number of chains, which were carried by Christian captives in Granada, afterwards liberated.

NEW HOUSE, CARRINGTON, NOTTINGHAM.

THIS house has recently been erected in Pelham-road, Carrington, near Nottingham. The ground-plan is illustrated. There is an extensive basement story, with wine, coal, beer, and store cellars, larder, &c. The upper floor has a bath-room, water-closet, box-room, besides a number of bed-rooms. The wash-house, servants' water-closet, dust and ashes pits, &c., are in a yard at the rear. The materials used are copper-mould bricks from Loughborough for the face work. The terra-cotta was manufactured by James Brown & Co., of London. The stone-dressings are entirely of Red Corsehill stone. Whitland Abbey green slates are used for the covering of the roof. The billiard-room and bed-room fire-places are in American walnut, and the best doors and staircase are in pitch pine and walnut. The total cost is about 1,800*l*.

The works have been done by Messrs. Bell & Son, contractors, under the direct supervision of the architect, Mr. A. Marshall, Nottingham.

THE CHURCH OF ST. MARY, STONE, KENT.

STONE, Stantune, or Stanes, as it was anciently called, is a small village on the south bank of the Thames, about half a mile from Greenhithe, and three miles from Dartford.

The church, which is well known as a beautiful specimen of thirteenth-century work, at present consists of a chancel, with a chantry and vestry on the north side; a nave, with western tower; and north and south aisles prolonged to the western face of the tower It was restored about twenty years ago by the late highly esteemed professor at the Royal Academy, Mr. Street; and at that time he published a full and interesting account of the church, from which it appears certain that the work dates from the time of Lawrence de St. Martin, bishop of Rochester from 1251 to 1274, who possessed a residence and estate of some value at Stone.

It was during the time of Lawrence de St. Martin's episcopate that the chief portion of Westminster Abbey was built, and the evidence of similarity between the work at Stone and Westminster is so marked that it may safely be conjectured that the same hands were employed in both places. Mr. Street, in his description of the church, says,—"For a village church its character is unusually sumptuous and ornate, and perhaps there is no example of any First Pointed building in England in which the grace and delicacy which characterise the style have been carried to greater perfection. It is impossible to speak too highly of the workmanship or of the design of every part, and close as is its similarity in many points to our glorious Abbey at Westminster, it is a remarkable fact that, in care and beauty of workmanship, the little village church is undoubtedly superior to the minster."

The early church appears to have consisted of a chancel and nave, with north and south aisles and possibly a western tower. The lower part of the present western tower and the prolongation of the aisles are not, I believe, earlier than the middle of the fourteenth century, though in the western bay on the north side there is a good Early doorway which probably was the original west doorway of the church.

The vestry on the north side of the chancel was added in the fourteenth century, and in the sixteenth the Wilshyre chantry was added in the space between the vestry and east end of the north aisle.

The upper part of the tower is very poor and of a later date; probably it was rebuilt after the fire, which Hasted says occurred on the 14th day of January, 1638, caused by lightning, when "the roof and steeple were burnt."

The exterior of the church is exceedingly simple, the windows of the aisle having only chamfers and a label over them; the buttresses, too, are very plain, all the richness of detail being reserved for the interior; and a most remarkable feature in the design of the interior is the way in which the whole of the work gradually increases in richness of detail and beauty from the west to the east.

In the *western* bay the arches of the arcade are only moulded, and the windows of the aisles are simply coupled lancets, with a quatrefoil above, and a chamfered internal arch and label, without any carving.

In the *middle* bay the arches are moulded, but more richly than the last, and the windows of the same shape; but the internal arches and quatrefoils are moulded, and the internal jambs are finished with a stone shaft, with moulded base and carved capital, and the label is enriched with "dog teeth," and is terminated wth carved heads.

In the *eastern* bay the arches are richly moulded, and the centre of the soffit has a large dog-tooth enrichment, making it much more ornate than the other arches. The windows are the same as before, except that the quatrefoil is not moulded, and instead of an ordinary internal arch, the windows in this bay have richly-moulded tracery on the inner face of the wall, standing clear of the window proper, though correspondingly of two lights, with a quatrefoil over (see longitudinal section). The jambs have each two shafts, one marble and one stone, and the centre is supported by a detached marble shaft. The capitals to the shafts in the jambs are carved, and there are carved bosses in the spandrels of the south window.

The east window of the south aisle is of two lights only, with two marble shafts in each jamb, and an engaged stone shaft to the mullion.

The east window of the north aisle is richer than any other in the body of the church. It is of four lights, very delicately moulded, and the large circle has a dog-tooth enrichment (see cross section, which, together with plan of the church, we shall give on another occasion).

Externally these last two windows are quite plain, but they show a curious freak at the springing, where the outer chamfer of the jamb is gathered in by a curved shoulder.

The chancel-arch is more richly moulded on the *west* side than any of the other arches, and has a beautiful ornament, in shape like a large dog-tooth, but carved into elaborate foliage.

We come now to the chancel. This, as will be seen by reference to the plan, consists of a small western bay, 7 ft. 6 in. long, and then two larger bays, wider than the nave, and with quadripartite vaulting, which at once gives much greater dignity to this part of the church.

The first bay is quite plain, without window or arcading; but the other bays have at the base three divisions in each of wall arcading on marble shafts, with trefoil arches, richly moulded, and with most delicate and beautiful carving in the spandrels, varied in design (two of these spandrels are shown on the sheet of details). The east wall has four divisions of similar arcading. This arcading is very similar to the arcading in Westminster Abbey. The magnificent window in the north wall was discovered at the time of the restoration, and restored in accordance with the old design. It is of three uncusped lights, with tracery composed of three cusped circles. The cusping is let into a groove, and a sufficient number of fragments were found to show the exact form of the original. Internally the arch and tracery mouldings are very delicate, whilst externally they consist of bold chamfers and hollows. On the exterior the jamb has two engaged shafts, and internally two detached marble shafts, and is very elaborately moulded.

The east window was inserted by Mr. Street, and the south window is a copy of the one on the north.

Before the restoration the groining had been destroyed, but marks of it remained against the walls, and numerous fragments of the ribs were found, so that it could be faithfully restored. In the south wall of the chancel is the old piscina under one of the divisions of the arcading.

The very peculiar plan of the chancel will, of course, at once be noted, and the only solution of it seems to be that the chancel was originally intended to have been the width of the small western bay and some 35 ft. in length, that before much had been built, grander ideas prevailed, and that all excepting the 7 ft. 6 in. in length, was removed and the two large bays substituted.

The work of these two bays is so out of scale with the nave and aisles that it does not seem probable that they were originally intended, while at the same time the detail clearly shows that there could have been no great interval between the date of the erection of the nave and the chancel. The low level of the chancel floor is also singular, and it is quite clear the altar could not originally have been placed close to the east wall, as the arcading is quite perfect at the east end. In the chancel floor there is a fine fourteenth-century brass cross.

On the wall of the south aisle immediately under the string there are remains of a painted running pattern of early character, and on the north aisle wall between the first and second windows there has been painted a large sitting figure of the Virgin nursing Our Lord. She is seated on a throne with shafts at the angles and a gabled trefoil canopy with pinnacles on either side; on the same wall east of the easternmost window the same subject is represented, and between this window and the centre one there are traces of a painted subject, but it is so damaged that it is impossible to tell what it represented.

In the north wall of the Wilshyre chantry there is a very elaborate founder's tomb under a panelled arch (it is shown in the long section). Weever says, "This knight [Sir John Wilshyre] is entombed in a faire chappell of his owne foundation; he was controller of the towne and marches of Callais, ann. 21 Hen. VII., 1506."

W. B.-S.

COTTAGE HOSPITAL NEAR WHITBY.

THIS building will accommodate sixteen persons, including four beds for accidents. The materials are red stocks and York stone. The wards inside will be lined with a glazed tile dado 5 ft. high. The cost will be about 2,400*l*. Mr. Thos. Miller is the architect.

The sketch plan annexed shows the arrangement of the various apartments.

A REAL EGYPTIAN GRIEVANCE.

OUR readers will doubtless recall the announcement recently made, to the effect that a new pyramid, the pyramid of Meydoum, had been, within a few weeks, explored by the archæologists; the news, arriving within but a short time of the almost "sensational" discovery of what we have come to know as the "Royal Mummies," aroused a fresh general interest in the Egypt of the past,—at a moment, too, when the Egypt of the present is largely engrossing public attention. This is the season, also, it must be remembered, when those fortunate enough to escape our winter are flocking to the mild climate and the novel excitement to be found in a now easy journey to a country once only visited by the most adventurous explorers, or the ardent amateur matriculating for certain admission to the Travellers' Club.

News reaches us that the discovery of the entry to the pyramid of Meydoum, from which such great results were expected, has proved deceptive. M. Charmes, the Oriental correspondent of the *Journal des Débats*, contributed to that paper on February 3rd a letter from Luxor, in which he relates how the hopes raised by the opening of the pyramid, founded on the expectation that the passage had never been entered since the day it was built, have not been realised. In the passage, as in the chamber to which it led, not an inscription remains,—all have been destroyed. A doubt is expressed as to whether the chamber discovered be really the principal, it being possible that, as in the case of the Great Pyramid, there are several chambers; the excavations will, therefore,

be continued. The results obtained are, however, of some value; the pyramid is proved not to be, as asserted, false, as, except its exterior, it resembles in construction all the other pyramids. But this one question solved, another has been substituted.

The excavation of the Pyramid of Meydoum is part of a scheme which M. Maspéro (the successor of the late lamented Mariette-Bey) has now set well on foot,—the study, one by one, of all the existing pyramids, to determine those which are able to supply any important information. They all contain a vast number of inscriptions, and the task of deciphering these is no light one; yet, long as it must be before the Egyptologists are in possession of this mass of facts, till then no exact idea can be formed of the manner in which the subject of death was regarded by the ancient Egyptians.

In another direction it would appear that M. Maspéro is doing good work. At Luxor he is making preparations to lay bare the temple which has so often been painted and photographed. Regarded as one of the most beautiful and curious of the monuments of ancient Egypt, most of which are of the Ptolemaic period, this being of the eighteenth dynasty, approximatively that is, about 1700–1500 B.C., it has long been half buried beneath a wretched modern village built in the magnificent colonnade. With proper permission, the village, composed of shanties, would be the easiest thing in the world to remove; the promise of a new hut on a piece of ground at a short distance, together with a small indemnity, would, it appears, satisfy the poor Arabs. The correspondent of the *Débats* alone foresees a slight difficulty in the removal of the houses of the French and English consular agents. As to the action of his own countrymen he entertains no doubt; he only fears Mustapha Aga, our agent out there, whom he would appear somewhat to mistrust, though he expresses his firm belief that England in such a case would willingly assist a good cause, especially as so many English tourists visit the spot.

The tourists increase in numbers every year; reports of revolution, insubordination in the army, and cholera are powerless to hinder them, and the easy means of communication, the steamers which now run so frequently up and down the Nile, bring, in larger numbers than ever, the strangers to see the ruins. Their presence, however, is, we are sorry to hear, deeply regretted by the genuine archæologist. In the thirty years that Egypt has been thus visited, more harm has been done to its old buildings than in the centuries of so much abused neglect which have passed over the country. The destruction caused by the tourists is really serious; piece by piece the inscriptions and the wall-paintings are being chipped away to supply "mementos." M. Charmes describes how, on visiting a few days previously the Valley of the Kings, he found most barbarously mutilated the famous tomb of Seti I., which was discovered by Belzoni; the alabaster sarcophagus is, it will be remembered, at present in Sir John Soane's Museum. When Belzoni and Champollion entered the tomb it was intact; not a word of the inscribed text was wanting; the wall-paintings were as fresh in colour as if painted the day before: now the tomb is nearly a ruin, and in a few years the destruction will be complete. It was in vain that an official was placed on guard, his action was invariably complained of by the visitors as insolent,—which, of course, it may have been; other monuments, which were closed for their protection have been forced open by the strangers. It appears, indeed, impossible to prevent the injury done to the monuments by the numerous tourists, injury twenty times as destructive within a few years as in the centuries of the alleged barbarism of Kopts and Arabs. Not as a remedy, but as a measure of precaution, it would be advisable to have the more important inscriptions copied. It must be remembered that there is a vast amount of repetition, unnecessary to notice. Here, as the correspondent of the *Débats* wisely suggests, is a work for the newly-appointed French "École d'Archéologie" at Cairo. Egypt has been revealed to us barely a century, its tongue is as yet scarcely familiar to us; to attain this end there remain literally hundreds of miles of inscriptions to decipher; the work is not a small one, but it is progressing. England, France, Germany, and Italy are toiling hard together. M. Charmes is perhaps too modest when he speaks of the backward position of his country in this direction. What publications, he asks, have we to compare with those of the British Museum and the great work of Lepsius? though he is right when he remarks that Germany is supplied with chairs of Egyptology in most of its universities. England also in this respect may be said to be somewhat behind Germany.

Whatever may be said by the sceptics and the indifferent, Oriental archæology has become in the present day the foremost of historic sciences. Without an acquaintance with it, it is impossible to understand the art, the literature, the manners, the religion, and the history of Classic antiquity. The discoveries of our century have shown that this antiquity was derived from Egypt, with the civilisation of which it was as closely connected as is ours with that of Greece and Rome. A series of exceptional circumstances has preserved for us the relics of this distant civilisation; our gratitude is due to those alike who pursue and who encourage a study which will place us in possession of the invaluable information which research cannot fail in time to elucidate.

THE CARRIAGE OF BUILDING MATERIALS, AND THE WOLVERHAMPTON CHAMBER OF COMMERCE.

A movement has been initiated by the Wolverhampton Chamber of Commerce, which has unusual claims on the sympathy and attention of our readers. As far as regards the command of the architect over the most suitable materials for his designs, and the provision by the builder of such materials, not only at the cheapest rates, but at prices on which he can safely calculate far in advance of his work, the inquiry has a special claim on our pages. But the particular interest of any trade, however direct, and of whatever magnitude, sinks into insignificance by the side of one or two questions of national welfare to which we wish, as briefly as is consistent with clearness of statement, to call attention. And, in addition to the interest we may take in the matter, first as regards the trades specially connected with building; and, secondly, as regards the general industrial development of the country; we must be allowed a special tenderness in behalf of an inquiry as to which we have long been among the small minority of public journalists who have insisted on the necessity and importance.

The subject in question takes the form, in the first instance, of an inquiry into the relative cost of transport by land and by water. For the benefit of those persons (if such there be) who may be disposed at the first glance to undervalue the importance of the subject, or to hold that it was settled, once for all, by the opening of the London and Birmingham Railway, we may remark that the question is one of sufficient doubt, sufficient importance, and sufficient timeliness, to form one of the first subjects for original communications on which prizes are offered in the present session of the Institution of Civil Engineers. The difficulty that has hitherto opposed the useful discussion of the question has arisen in part from the outcome of a policy which, since 1833 and 1834, when the Midland Railway stood face to face with the Aire and Calder navigation, and when the Birmingham and Grand Junction Railways were opposed by the Birmingham and Grand Junction Canals, when, in fact, a free fight was joined in between the actual carriers by water and the intending carriers by land, has been steadily pursued by the latter; and that, moreover, in spite of the constant efforts of the Board of Trade. We mean the policy, adopted by the railway companies, of so publishing, and we may even add of so keeping, their accounts as to render it impossible for any opponent, or even for any friend, to ascertain at what exact rate of profit or of loss each of the very distinct branches of the trade, which they own as carriers, was conducted. To this obliteration of the materials for criticism was added the successful attempt to grasp, in one way or another, such commanding connexions of the canal system as to place the separated trunks almost entirely at the mercy of their enemies,—we will not say their natural enemies, for the true policy would have been one of alliance and mutual aid. It has thus resulted, not only that, at this time, the United Kingdom is almost the only part of Europe in which it is supposed that it is as cheap and better to convey building materials, timber, minerals, manure, and all heavy and bulky articles of low intrinsic value by rail as by water, but that the public in general have no idea that a great question of the kind exists. If anything has been said on the subject, the reply has been that it was a mere matter for academical discussion,—no practical question at all. Men who had leisure might amuse themselves by calculations as to the theoretic cost of land or water carriage; but so long as we could have bricks or coals, carried at a third of a penny a mile, what man of business could care for anything more?

Our usual habits of insular content have hitherto prevented us from noting how very differently the matter has been regarded by our Continental neighbours and rivals. France, as some of us can very distinctly remember, caught from us the torch of industrial progress. Joseph Locke and Thomas Brassey first showed the French how to make and how to work railways. Other Englishmen whom we can name followed, and down to 1857 or thereabouts English aid was eagerly sought on the Continent, and English practice readily followed there. But there arrived a time when the pupils advanced beyond their teachers. The French, Italian, and German engineers did not allow the working of their lines to pass from their hands into those of commercial managers, however able. They applied the same process of scientific analysis to the facts of the working as to the facts of the construction of railways. The result was that they reverted to the old doctrines of Brindley, of Smeaton, and of Telford. They found, past all possibility of question, that where it would cost more than a halfpenny to carry a ton of bricks or coals for a mile by rail, it would cost less than a farthing to carry them by water. They found that while it would cost another halfpenny per ton for interest of money on the rail, it would not cost half a farthing for interest on the canal. And having arrived at these distinctly practical conclusions, they set to work to complete their canals.

Now this, to which English men of business have hitherto paid small attention, affects us very directly in this way. It is as certain as any future event can well be that in the course of a few years France will be conveying passengers at half our present fares, and will be carrying heavy articles by water at a third of the fares at which we can remuneratively carry them by rail. And this means a tax of cent. per cent. on so much of the cost of British productions as arises from carriage, or from travelling. Such a mode of handicapping our manufacture is one that no English man of business can afford to despise.

We are unaware of the special circumstances which have, at this moment, called the attention of this particular body of working capitalists to this very serious danger to British manufactures. Whatever it may be, we rejoice at the fact. We rejoice at seeing the question pass from the domain of the formulæ of the man of science to that of the ledger of the merchant. We have been long aware of many of the facts, and may have even wearied our friends in our efforts to call attention to them. Attention is all that we ask; for of the results of careful investigation of the subject by practical men of business we have no doubt whatever. The river-ways of France are alive with active labour. The new prime minister of France is himself the author of a plan which requires the outlay of from ten to fifteen millions sterling a year for the next fifteen years, on public works. These comprise the improvement of ports and harbours, and the completion of minor railways. But the great bulk of the outlay is on inland navigation. We must anticipate that one of the first steps of the Wolverhampton Chamber of Commerce will be to ascertain what France is doing as to canals, and how far her activity will affect our own.

A New Board School, Fulham.—A public meeting in connexion with the opening of a new Board School in Everington-street, Crown-road, Fulham, was held on Monday evening. The school has been built by Mr. Charles Wall, of Chelsea, from the plan of Mr. E. R. Robson, the architect to the School Board. There is accommodation for 481 infants on the lower floor; 360 girls on the second floor; and 360 boys on the upper floor,—total 1,201 children. With the advance of the speculating builder the cabbage-fields are gradually being covered with streets of houses, and consequently there is a large increase of population in the locality.

"AN IMPORTANT ECONOMY TO BE EFFECTED BY THE BUILDER."

SIR,—I have read the leading article in the *Builder* of January 28th, with the above title, in which you direct attention to the advantages of employing coverings to scaffolds or building stages, and the advisability of completing the heating or warming arrangements immediately after the slating in of our buildings,—the one to allow of the work being carried on as well in wet weather as in dry; the other to diffuse a warmth and dryness during the finishing operations, so that, as you aptly put it, "seasoned timber is not allowed to lose in a few weeks of neglect the quality which it has taken years to gain."

The latter precaution I have adopted for some years in all works designed by me in which a heating apparatus was arranged for, and I can well endorse what you say as to its advantages.

With regard to covered scaffolds, the following extract appeared in the *Scientific American*, in 1879, from some remarks of mine in reference to the "screw scaffolding" which I had designed and used in the construction of one of my buildings:—

"As to the covering in of these scaffolds, all that the builder requires to do for this purpose is to stretch tarpaulins or covers over such portions of the ledgers as will afford the necessary protection to the working platforms and walls. These coverings may be placed in position when the scaffolding is first fixed, as they add but little to the weight, interfere in no way with the raising operations, and go up with the scaffold without further attention or alteration.

There is no valid reason why the whole operation of building should not be carried on under cover, and the 'waller' be placed in as good a position for doing his work as the 'stone-dresser.'"

A perspective view and description of this "screw scaffolding" appeared in the *Scientific American*.

I am quite at one with you as to the advisability of having a builder's plant so designed and arranged that he need not care whether it "rains or shines," and this will apply equally to works of any importance throughout the country. But what shall be said as to expediting building operations in those portions of London more particularly devoted to business, and in those great traffic arteries stretching westward from the Bank? Here is a field for "an important economy to be effected by the builder," by the workman, by the ground-owner, by the tradesman, and by the general public.

I can conceive of a time when it may be deemed advisable by Parliament or local authorities to insist, in the interests of the public, on relays of workmen being engaged, so that the pulling down and building up, in populous centres, may be conducted continuously during the whole twenty-four hours of each day.

As I should propose these operations for *towns*, gas for night working could always be had, and at no distant date, electricity may possibly be pressed into the service of the builder. Indeed, as building operations in busy thoroughfares,—if I, as an architect, dare more than whisper it,—are always a nuisance to the public, and ought to be got out of the way as rapidly as possible, the intelligent builder will endeavour to limit the duration of such operations, so that he may put off the day when his craft shall be "harassed" or "regulated" in the direction indicated.

If a large building company were established in London, with the distinct object of working in wind or calm, in rain or dry weather, continuously day and night, so as to finish our buildings in one-fourth, or even one-third, the time now spent in such operations,—who can say what percentage above current rates capitalists would not be prepared to give for these advantages? Such a company could undoubtedly command good prices and an abundance of work, and ought to divide a handsome dividend.

I have no hesitation whatever in saying that such a system of scaffolding, &c., could be devised as would admit of every hour, during both day and night, being fully utilised, in fair weather or foul, and that in winter as well as in summer.

J. J. LISH.

Election of a Royal Academician.—At a general assembly of the Royal Academy of Arts, held on Monday evening, Mr. Joseph Edgar Boehm, sculptor, was elected a Royal Academician.

PARISH GUILDS OF HEALTH.*

SIR HENRY COLE suggests that, for the protection of health and the prevention of fevers of all kinds, a Guild for Health, voluntary, self-supporting, and self-managing, should be established throughout the kingdom, in *every parish district* at least, and that there should be a central station or office established in it, connected with some suitable shop, such as an ironmonger's, turnery, &c., on the principle of post-offices.

The objects of a guild organised on self-supporting principles should be, by means of a contractor,—

a. To distribute printed information of Local Boards of Health and other society's rules on all sanitary subjects, drainage, ventilation, water-supply, heating, &c.; to supply sanitary publications at the cheapest rate; also to publish a cheap periodical journal.

b. To exhibit and sell specimens of various sanitary apparatus, &c., such as cleaning machines for house-drains, different washing-machines, disinfectants, &c.

c. To promote the proper removal from private houses of patients suffering from small-pox, typhoid fever, or any infectious ailment.

d. To provide skilled labour to perform constant sanitary work, and all those many minute but most necessary details of work which the parish officers cannot, and perhaps ought not to, undertake, such as,—

1. Periodical cleaning of house-drains, gully-traps, &c.

2. Periodical examination of proper supply of water, and cleaning of water-cisterns, pipes, &c.

3. Periodical examination of kitchen-flues and boilers, and the cleaning and repair of them.

4. Proper management of dust-holes, and separation of garbage, to be afterwards removed by parish officers.

5. Miscellaneous occasional work, such as window-cleaning, sweeping snow off the roofs of houses, &c.

At the outset, a Superintending Committee, to include medical practitioners of the district, with chairman, treasurer, and secretary, should be organised for each district, with power to appoint a contractor for works stated, also a distributor of information and canvasser for members.

A scale of fees for each class of services to be performed by the tradesmen contracting to do it, should be fixed by the committee of each district; the fees being regulated by the probable demand for services and their nature in the district.

The subscription for registering a member of the Guild might be, say 1s. a year, or any sum the local Guild thought necessary. Special subscriptions from the rich and benevolent might be raised to promote sanitary arrangements for the poorest classes. The work on behalf of persons living in small houses and rooms, who are not yet educated to appreciate the necessary precautions against illness, might be done for them through the benevolence of others, it being the interest of the subscribers to do such work for the security of their own health.

* To prevent fevers and disease in houses by aiding, supplementing, and preserving the work done by local sanitary surveyors and medical officers of health and all societies and companies for sanitary assurance and protection.

HOUSE DECORATORS' CLUB AND INSTITUTE COMPANY.

ON the 2nd inst. the first annual general meeting of this company was held in the Painter-Stainers' Hall, Little Trinity-lane, Queen Victoria-street. There was a large attendance of the members, and the chair was occupied by Mr. J. G. Crace. Among other prominent supporters of the movement present were:—Mr. J. D. Crace, Mr. Graham (of Messrs. Jackson & Graham), Mr. E. Monnery, jun., Mr. F. Coulton, Mr. Peacock, and Mr. Hodgson Pratt.

The report of the directors stated that progress had been made slowly but surely. Several attempts had been made to secure premises to suit their requirements, but without success at present, although they were pleased to state they were in a position to commence business at once, but were desirous of its taking such proportions as would be befitting them and the cause they had at heart. With a view of adding to the number of shareholders, they had waited on several of the employers who were favourable to their objects, and they specially mentioned the very material assistance rendered in many ways by Messrs. Crace and Donaldson. The directors earnestly called upon each shareholder to make a strong effort to induce others to take up shares, and so place the success of the company beyond doubt, and thereby enable them to take premises they should always look upon with pride. They regretted the loss of the services of their late zealous secretary, Mr. G. Grant, through business calling him away, but were fortunate in securing those of Mr. S. B. French (the late treasurer), and Mr. W. A. Thomas having resigned the office of director, had been appointed treasurer. The report having been unanimously adopted, the meeting re-elected Mr. French and Mr. Thomas to their respective offices. The following gentlemen were added to the board of directors:—Mr. A. Alston, Mr. H. Hunter, Mr. A. Turner, Mr. F. J. Pain, Mr. W. Hancock, Mr. T. Stuckey, Mr. F. Cock, Mr. G. Shaw, C.C., Mr. E. Brown, and Mr. Poynter.

The Chairman then stated that they had finished the purely formal part of the proceedings, and now they had to consider how best to set about the somewhat difficult task of obtaining a suitable building for their proposed club and institute. Personally, it gave him great pleasure to assist in any movement which had for its object the providing of means for rational amusement and social intercourse, especially amongst those belonging to his own craft, without imposing upon them the necessity of resorting to the public-house. He had letters in his possession from large employers offering pecuniary assistance, and he was certain the Painters' Company, though small in numbers and not overwhelmed with this world's wealth, would do their utmost to encourage house-decorators in the practice and the perfection of their art.

Mr. Hodgson Pratt afterwards delivered an address, pointing out, from his long and intimate experience of working men's clubs, how success was most likely to be attained. The remainder of the evening was occupied in discussing questions of detail, and it was announced at the close that Mr. Graham, Messrs. Cowton & Co., Mr. F. Cowton, Mr. J. D. Crace, and Mr. Laing (of Messrs. Laing & Co., Duke-street, Adelphi), had each taken ten shares in the company.

WATER AND SEWAGE CONTAMINATION.

IN the course of a paper read at the Institution of Civil Engineers on the 24th of January, on "The Analysis of Potable Water, with special Reference to the Determination of previous Sewage Contamination," by Mr. Chas. W. Folkard, the author considered the bearing of biological research on the subject, pointing out that mere dilution had an almost inappreciable effect in disarming the germs of disease of their power. Thus, supposing a glass of water to contain but one germ, if the person taking it was sufficiently unhealthy or weakly, he would contract the disease almost as certainly as if there were hundreds of germs. In the author's opinion it would be impossible to banish zymotic disease from towns the water supply of which contained the dejecta of persons suffering from the disease, even though present in the most minute quantity. The very weakly would contract the complaint from the water, and from them it would spread to the more robust around them. Again, these germs were endowed with such persistent vitality, that they withstood the effects of heat and cold, moisture, drought, and chemical agents, to an almost incredible extent, affording what seemed, at first sight, indisputable evidence of the now exploded doctrine of spontaneous generation. From this it appeared that once-contaminated water was unsuitable for dietetic purposes.

In conclusion, the author contended that a radical change was the only remedy. Irrigation and chemical treatment were alike powerless; in addition to which, during the heavy rain, all existing sewerage systems were incapable of dealing with the huge volumes of water poured into them, and the sewage was allowed to flow direct into the river, to the manifest disadvantage of the towns below, which were dependent upon it for their water supply. Filtration, again, was powerless to effect real purification. The germs of disease were so minute that they could pass one hundred abreast through the interstitial spaces of ordinary sand, and dissolved substances were, of course, unacted upon. In view of the great

increase in cancerous diseases of the stomach and intestines, the subject was worthy of the most careful study; and, taking into consideration the unreliability of the results afforded by chemical analysis, the only way to ascertain if a sample of water was fit for drinking purposes was, in the author's opinion, to trace it to its source, and see that contaminating matter was excluded, from the time that the water fell as rain till it entered the reservoir or engine-well.

TOPOGRAPHICAL SOCIETY OF LONDON.

ON the 3rd inst. the first annual meeting of the Topographical Society of London was held in the Court-room of Drapers' Hall, Throgmorton-street, by the kindness of the Court of Assistants of the Company. The Right Hon. J. Whittaker Ellis, Lord Mayor, who has been elected President of the Society, took the chair, and there was a good attendance of members.

The report of the Organising Committee was presented and read by Mr. T. Fairman Ordish, hon. secretary. It contained the following passages:—

The preparation of the view of London, by Van den Wyngaerde, the first part of which has already been issued,* has required great care, and necessarily occupied much time; but the remaining portion is now in a very forward state, and will be ready for publication in a few months.

It is proposed that when several maps of a particular period have been produced, a volume descriptive of all of them shall be issued. By this means the repetition, which would be unavoidable in several descriptions, will be saved, and the further advantage of comparison of details will be obtained.

Another branch of the Society's work which is of paramount importance is that of registering the various changes that are continually taking place in London. For this Mr. Emslie, a member of the society, has prepared a view of the excavations at Leadenhall, showing the relics of the old buildings; and Mr. Milliken, another member of the society, has made several drawings on wood of houses that have been pulled down within the last year or so. This system of the registration of changes is one, however, of too vast a character for one or two persons to deal with adequately. The Committee look upon this task as one of the greatest importance, more especially as no organisation exists at present for carrying it out, and they therefore hope that it will be possible to arrange the system of local committees, which was proposed in the statement made at the inaugural meeting of the society.

Of work in hand, special mention may be made of the extracts from the Calendars of State Papers, which are being proceeded with, and will probably be printed soon after the completion of Wyngaerde's view. The importance of these volumes is known to all those who have frequent reason to consult them, but the many valuable local allusions have never been used as they deserve to be by the historians of London, so that a series of these extracts, combined with extracts from the Reports of the Deputy Keeper of the Rolls and the Historical MSS. Commission, cannot fail to throw a flood of light upon the history of London. In addition to these extracts, Mr. H. B. Wheatley has proposed to compile a Handbook of London Topography, which should contain a rapid sketch of what has been done in the subject, and what is still left for a London Topographical Society to do.

Mr. Wheatley having made a statement as to the future work of the Society,

The Lord Mayor, in moving the adoption of the report, said he knew of nothing more important in the history of a country than that impressions should be retained of its surface. Literature dealt mainly with the manners, habits, and customs of men, and except in some historical novels, or in works purely topographical, this matter of the surface of the country was rarely touched upon. It would be seen therefore that the work of a society of this kind was invaluable.

Mr. J. G. Crace seconded the resolution, observing that the proceedings of the Society were regarded with interest not only in England, but in America. He, however, advised the Society not to attempt too much, and to be careful not to waste its energies in doing work that had been done by other bodies.

The report was unanimously adopted.

On the motion of Mr. Wheatley, seconded by Mr. Milliken, it was resolved, "That the thanks of the Topographical Society of London be given to the curators of the Bodleian Library for their kindness in lending the original drawing of London, by Ant. Van den Wyngaerde, for the purpose of reproduction by the Society."

Mr. F. J. Furnivall moved the adoption of the rules, copies of which were distributed amongst the members, and in the course of a few observations expressed a hope that London would before long set up a bust or a statue of Chaucer, who was a citizen of London. As a student of Shakspeare and Chaucer, he (Mr. Furnivall) was in a position to testify to the great value which the work of the Society was likely to be to literary men and students of history.

This was seconded by Mr. Harrison, who thought that the annual subscription (one guinea) had scarcely been fixed at a sufficiently high figure.

The officers and council were then elected, viz.:—

President.—The Right Hon. the Lord Mayor.
Vice-Presidents.—Earl Beauchamp, the Earl of Rosebery, Sir Joseph Bazalgette, C.B., and Mr. George Godwin, F.R.S., F.S.A.
Treasurer.—Major-General J. Baillie.
Director.—Mr. Henry B. Wheatley, F.S.A.
Honorary Secretary.—Mr. T. Fairman Ordish.
Other Members of Council.—Messrs. E. W. Ashbee, F.S.A.; Wynne E. Baxter, F.G.S.; Arthur Cates, F.R.I.B.A.; C. E. H. Chadwyck-Healey; F. J. Furnivall, M.A.; G. Laurence Gomme, F.S.A.; Mr. Alderman and Sheriff Hanson, M.A.; Richard B. Prosser; W. Rendle; Owen Roberts, M.A.; Edward Solly, F.R.S.; John Tolhurst, F.S.A.; and Edward Walford, M.A.

On the motion of Mr. C. Markham, seconded by Mr. Prosser, a vote of thanks was given to the Drapers' Company for the use of their hall.

A vote of thanks was given to the Lord Mayor, on the motion of Mr. O. Roberts, seconded by Mr. Steevens (of the United States), and his lordship having acknowledged the compliment, the proceedings terminated.

* Noticed in the *Builder*, p. 92, *ante*.

PROPOSED MEMORIAL OF THE LATE MR. STREET.

ON the 3rd inst. a meeting was held in the rooms of the Royal Institute of British Architects, 9, Conduit-street, for the purpose of promoting a memorial to the late architect of the Royal Courts of Justice. On the motion of Sir F. Pollock, the Right Hon. A. J. B. Beresford-Hope, M.P., was called to the chair. He said:—It is a melancholy cause which puts me here, and I am sure you share my grief, but it is a consolation to be able to take part in a memorial to our honoured, dear, and most eminent friend George Edmund Street. We have met, not to make speeches, but to do business. I need not say who he was or what he was, for every one here knows his eminence, which was not special, but general, and which fully deserves a worthy memorial. There are many kinds of memorials, some better, some worse, all having their merits, but there is one as to which all will agree in regard to its propriety. It is due to Mr. Street that it should be put in a conspicuous position, which will make posterity, who might otherwise be forgetful, remember who he was and what were his performances,—I mean some effigy in the Law Courts. I use the word effigy because it is a mere matter of money whether that effigy shall be a statue or a bust. I trust there will be money enough for a statue, but, whether statue or bust, the presentment of his person in some conspicuous place in the Law Courts. There is a precedent for a statue in that of Sir Charles Barry in the Houses of Parliament, and if there were not that precedent we might now well make one. I have a letter from the Lord Chancellor, and the assent of Mr. Shaw-Lefevre, so there will be no difficulty in regard to permission for its erection, and it only remains for us to agree to a memorial, to appoint a general committee and officers, and also a sub-committee to deal with details, and suggest a sculptor or sculptors, when a subsequent meeting of the general committee is held.

Mr. Wells, R.A., then moved:—"That, in the opinion of this meeting, it is advisable to take steps for placing a statue or other sculptured memorial, giving a portrait of Mr. G. E. Street, in the Royal Law Courts."

Mr. Robinson, Q.C., seconded this, which was carried unanimously.

Mr. A. W. Blomfield was then elected honorary secretary, Mr. Waterhouse, A.R.A., treasurer, and a long list of influential names, including the Prince of Wales, the Lord Chancellor, the First Commissioners of Works of the present and late Governments, a number of bishops and deans, judges and barristers, with power to add to their number, was submitted and adopted. From these a sub-committee was selected, and agreed to. It was decided not to publish the list of the general and sub-committees for a few days, as many are away on circuit whose names will, no doubt, be appended when they have been communicated with. After the meeting of the general committee, the sub-committee remained sitting to initiate their labours.

We understand that, curiously enough, Mr. Street, when once pointing out the place in the Law Courts buildings which is to be occupied by the statue of the late Mr. Field (who took a very active part in the movement in favour of the concentration of the courts), jokingly said, with reference to a spot in the immediate vicinity, "And *here*, if they ever think fit, they can place a statue to the architect of the building,"—or something to that effect.

MUNICIPAL CONTROL OF STREETS AND BUILDINGS.

AT a meeting of the Liverpool Engineering Society, held at the Royal Institution on the 1st instant, Mr. William Goldstraw read a paper on "Municipal Control of Streets and Buildings." The author showed that from the earliest times the arm of power had been put forth in the control of streets and buildings, generally with much benefit to the community. Ancient Rome and Mediæval Europe were referred to for instances of restrictions in these matters. In Paris there had been building regulations of gradually increasing severity from the thirteenth century to the present day; and that city had now reached a higher standard in this respect than perhaps any other place. In England, public control of buildings dated as far back as 1189, when twelve aldermen of London formed a court to assist the first mayor in dealing with this special subject. After referring to the determined efforts made in the reigns of Elizabeth and James to impose limits on builders, the author dwelt on the rules for rebuilding London after the Great Fire of 1666. The Act then passed was in many points the prototype of all Building Acts; in some respects it went further than modern regulations. Since that period, a large number of statutes had been passed to insure the health, safety, and comfort of dwellers in towns. The author traced the history of these enactments and of many attempts to consolidate and amend them; and showed that both in London and the provinces, the number and intricacy of the various laws and authorities on the subject were causes of great annoyance and perplexity, both to officials and to persons concerned in building. Municipal surveyors found great lack of information on the subject; and nearly every town had rules differing from those of another. The remedy he suggested was a general Building Act for the whole country. As a beneficial example, the Public Health Act, 1875, was referred to. The author believed that the Model By-laws issued by the Local Government Board in 1877 would pave the way for a general statute; and that body appeared to be the only one able to frame and carry such a scheme. Architects and engineers could help on the desired end by procuring local enactments having features in common, and by speaking in concert on behalf of a comprehensive measure. The passing into law of the lapsed County Boards Bill, or of the expected County Government Bill, might create an immediate necessity for a general Building Act. Isolated effort could do little in such a matter. To the unsuccessful Bill promoted by the Metropolitan Board of Works in 1874 must now be added a partial failure in Liverpool. The City Engineer had recently put forward a complete proposal for the consolidation and amendment of the building regulations of Liverpool, which might have formed a rough basis for a general Act. This scheme, however, had been consigned to the limbo of unrealised projects.

Church and Churchyard Protection.—The council of the City Church and Churchyard Protection Society, at their last meeting, Mr. Edwin Freshfield, M.A., F.S.A., in the chair, took into consideration the case of St. James's, Garlickhithe, having ascertained that the rector is entirely averse to the demolition of his church, as are also the patrons, the Dean and Chapter of St. Paul's, and the parishioners. The council unanimously decided to oppose the London and South-Western Railway Bill so far as scheduling the church in the line of demarcation is concerned. Mr. Henry Wright stated that the Painters' Company, whose hall is situated in the parish and close to the church, is opposing another Bill, which will take their hall and almost obliterate the parish.

COMPETITIONS.

East Looe Church, Cornwall.—In this competition the designs sent in were submitted to Professor T. Roger Smith for his opinion. At his suggestion, the committee have selected a design under the motto "Briton," which is by Mr. Edwin J. Munt, architect.

All Saints' Church, Lewes.—The committee have selected, from the seven sets of plans sent in competition for this work, a design with the motto "Experientia," prepared by Mr. Bassett-Smith and Mr. E. J. Munt, architects, London.

Newcastle Union Offices and Workhouse.—The plans submitted in competition by Mr. W. H. Dunn, of the firm of Thompson & Dunn, architects, have been accepted by the Guardians, and the author awarded the first premium, both for the proposed new block and receiving-wards at the workhouse and the new board-room and alterations to the Union offices, Pilgrim-street. The competition was limited to local architects.

BUILDING PATENTS.*

APPLICATIONS FOR LETTERS PATENT.

413 B. L. Thomson, London. Protecting roof, walls, &c. Jan. 27, 1882.

424. M. Ingram, Manchester. Preventing waste of water from lavatories and baths. Jan. 27, 1882.

437. J. Imray, London. Apparatus for effecting fireproof separation of the stage and proscenium. (Com. by K. Pfaff, Vienna.) Jan. 28, 1882.

438. J. Imray, London. Manufacture of decorating paper. (Com. by A. Cottais, Paris.) Jan. 28, 1882.

445. J. Jaffrey, Manchester. Domestic fire-grates, &c. Jan. 28, 1882.

449. J. W. Brown, Leamington. Kitcheners and cooking-grates, &c. Jan. 28, 1882.

468. E. Wilkins, London. Apparatus for sustaining sliding window-sashes, &c. Jan. 31, 1882.

469. J. Parkinson, Caton. Furnaces for heating greenhouses, &c., by hot water. Jan. 31, 1882.

505. J. D. Brunton, Westminster. Apparatus for dressing stone, &c. (Partly com. by F. H. J. Trier, Boston, U.S.A.) Feb. 1, 1882.

519. G. W. von Vaurocki, Berlin. Fireplaces. (Com. by R. Müller, Berlin.) Feb. 2, 1882.

NOTICES TO PROCEED

have been given by the following applicants on the dates named.

Jan. 31, 1882.

4,136. W. Truswell, Sheffield. Appliances for heating by steam. Sept. 26, 1881.

4,185. F. H. F. Engel, Hamburg. Treating calcareous bricks. (Com. by J. A. A. Renck, Wickendorf, Germany.) Sept 28, 1881.

Feb. 3, 1882.

4,795. G. W. von. Nawrocki, Berlin. Kilns for burning bricks. (Com. by E. Arnold Fürstenwalde, Prussia.) Nov. 2, 1881.

4,796. G. H. Jennings and S. Jennings, Stangate. Lavatories and urinals. Nov. 2, 1881.

ABRIDGMENTS OF SPECIFICATIONS

Published during the Week ending February 4, 1882.

2,759. S. L. Costes, Newport Pagnell. Door-latches.

The bolt is withdrawn by lifting a handle in connexion therewith, instead of by turning the same. A transverse piece slides in an opening in the rear end of the bolt, and on the handle being lifted it draws the transverse piece out, and a spring forces the bolt out. When the handle is depressed the inclined surface of the transverse piece draws the bolt in again. June 24, 1881. Price 6d.

2,762. T. Barnby, Birmingham. Adjusting action for chairs and couches.

The "rack" of the action is made in form of a continuous scroll or series of curves, so that there are no angles or dead joints to overcome. June 24, 1881. Price 6d.

2,786. T. Carder, Chudleigh. Kilns.

A series of arched kilns is arranged in an elliptical or circular form, and the chief novelty is the leading the flues from the furnace through the one kiln, and then to a space under the furnace of the next kiln, whereby a hot blast is directed into the second furnace, greatly increasing the heat, and so on, all round. June 25, 1881. Price 6d.

2,789. H. Otway, London. Roller for roller-blinds.

For circular windows, and to enable the blind to follow the curve of the window, on a rod, suitably curved, are placed a number of short rollers, the ends of which fit loosely into rings and are connected by short pins. On the first roller being turned, all the others revolve with it, thereby rolling up the blind. (*Pro. Pro.*) June 25, 1881. Price 2d.

2,809. W. Joy, Aylesford. Apparatus for the manufacture of cement.

This is an improvement on Patent No. 3,596, of 1877. A flat chamber is built above the kiln, beneath the floor of which are flues, through which the heat from the kiln passes on its way to the chimney. The slurry is run on to the floor of this chamber to be dried. June 27, 1881. Price 8d.

2,854. L. A. Brode & R. Muir, Glasgow. Manufacture of baths, &c.

The inside is formed of slabs of marble, and a mould is built round. Into the space between the mould and the lining a liquid cement is poured and allowed to harden. (*Pro. Pro.*) June 30, 1881. Price 2d.

* Compiled by Hart & Co., patent agents, 28, New Bridge-street, E.C.

NEW REDUCING AND WASHING FLOORS, LANNER, CORNWALL.

A LARGE corrugated iron building is now being erected for the Bellvean Tin and Copper Mining Company (Limited), at their works at Lanner, Cornwall, the outside dimensions being 130 ft. by 60 ft., supported by columns. The crushing-rolls, machinery, pulsators, &c., will be placed at the east end, and beyond this are the engines, boiler-house, &c. The remaining portion of the floor-room will be used for the "buddles," and other washing and dressing purposes. To the south will be the counting-house, mine captain and manager's rooms, also workmen's dining and dressing rooms, store, joiners' and blacksmith's shops, &c. The reducing machinery includes all the latest improvements, and this will be the first building of the kind erected in that part of the country.

Mr. D. Burns, F.G.S., of Carlisle and Silloth, is the engineer; and the works are being carried out under the personal superintendence of Mr. D. Mackenzie, C.E., &c., the company's resident manager, by Messrs. J. Leach & Co., contractors, Manchester.

YORK GATE.

SIR,—The interest so generally felt with respect to York Gate will call forth expressions of commendation to your correspondent, "P. H. B.," in directing attention to it in any way. The condition for a long time has not added to its beauty or appearance, its base being buried by the earth of the newly-formed flower-beds; and this is the more to be wondered at since money has been so freely and so judiciously spent in the ornamental gardens in front of it.

I do not follow "P. H. B.'s" suggestion for its removal, not only because a water-gate to a hospital on the banks of the river would be of but little service now that the Thames is not used for passenger traffic in a way that the gate could serve, but from regard to the monument itself.

An examination of the gate will show that it would be impossible to remove it without its all but total destruction. It will continue for a lengthened period where it is if it has but the ravages of time only to contend with, but its decayed and worn condition would cause its loss under the process of taking to pieces and removal. What portions might survive this would require to be re-worked, either to agree with the new stone necessary or the altered position, and the identity of the monument would be gone. Under these circumstances, the removal would result in but an almost new copy accomplished by the loss of the original. If St. Thomas's Hospital or any other site is found to require a water-gate, by all means let the admirable design be followed exactly if so wanted, but this can be done at much less cost than would be necessary to remove, and without the destruction of the original.

Proposals for removal have been made at various times, and several sites have been suggested. But why should it be moved at all? It occupies its original site, and is interesting on that account, and as marking the position of the mansion to which it belonged. It also serves to show the old line of the Thames, and affords evidence of no little interest to the present, and I hope it may to many generations of spectators yet to come, how great has been the work of reclamation effected by the great Embankment, of which the metropolis may justly be proud. It can be well studied in its present position; and all that is wanted is to have the earth, which has accumulated at its base, cleared away to show the level and the proper proportion of the gate. I am glad to hear that this very desirable work is in contemplation. Beyond this, a little stopping and pointing to the stonework will arrest decay for some time.

Your correspondent's allusion to the colonnade of Burlington House deserves public attention. Many months ago I paid a visit to the mass of ruin now lying in Battersea Park. A troop of school children were running over the graceful carving and the entwined initials of the frieze, which latter was laid out in a long line as if to form a convenient run for them, while the more robust and hard-footed were jumping from stone to stone. The columns, which have more than once come in for their well-deserved meed of praise for the elegance of their proportions, in the pages of the *Builder*, were lying uncared for except by the children, who were trying their skill in walking over them in their prostrate condition.

This state of things but too fully justified the remark of one of the park-keepers, that there would soon be nothing left worth re-erection.

It is greatly to be deplored that such an admirable work of art should be lost to us and to those to follow us, when it can be prevented by the moderate outlay requisite for the re-erection; but if so spent, it must be done at once.

Surely, if the public funds have fallen so low as not to justify such a work as this being done, yet it may be possible to place a few hurdles around the stones to prevent the use of the spot as a place of recreation?

E. P. LOFTUS BROCK, F.S.A.

THE INVASION OF ANTS.

SIR,—"J. A. P." has not yet earned the reward. The ants of which he speaks are a different species to those that infest our houses; and I am quite sure that I should not find our pests in the work just advertised by Mr. H. C. McCook, "The Honey Ants of the Garden of the Gods," to which is prefixed the honeyed criticism of the *Spectator*, "a most fascinating account of one great tribe." Their origin must be sought in some other place. They are about the thickness of a pin's point, and from one-eighth to three-sixteenths of an inch in length, and their power of reproduction is a million times in proportion to their size. They have evidently not the same "amount of intelligence" as those defeated by "J. A. P.," for my cook has laid most cunning traps, and scalded millions, but the survivors will not take the hint.

Naphtha is the same treatment as carbolic acid, which they avoid, I fancy, from the great power of their sense of smelling. F. S. A.

SIR,—The best remedy I find is as under:—Take a handful of coarse sugar, and a small quantity of plaster of Paris; rub these together in your hand, and strew the mixture about the floor. I am quite satisfied if they make one meal they will not require the second,—not the same ants. If fresh ants appear, give them the same dose. It is a very simple remedy, and quite safe.

WATFORD, HERTS.

Another correspondent pronounces camphor a certain cure. If any of our correspondents test the various remedies which have been suggested in reply to "F. S. A.'s" letter, we shall be obliged if they will communicate to us the results.

STAINED-GLASS WINDOWS.

SIR,—In the last impression of the *Builder*, I read with much interest an article referring to Mr. Lewis F. Day's paper on Stained Glass, which was read before the Society of Arts last week. Although I, and many others who have read Mr. Day's able paper, quite concur with most of his opinions, especially with regard to the notoriously insufficient price for good work, which cripples alike the designer and painter, and also other points which were touched upon, I must take exception (as many others who have read the paper will, I have no doubt) to his naming Mr. Burne Jones as the only artist of independent note as a painter whose glass is worthy to be named with the best old glass. It reads, to say the least, very depreciatory to many accomplished artists whose names I could mention, who have, as Mr. Day himself observes in an earlier portion of the paper, "identified

themselves with glass-painting, and won a well-merited reputation by it." Of course, opinions on art, as on every other subject, differ widely, and although many of the most talented designers and painters do not work in accordance with Mr. Day's ideas, their works are quite as concurrent with the true principles of stained glass and also with the recognised precepts of art, both as regards form and colour, as Mr. Burne Jones, whose work, though worthy of high praise, appears to me to be unduly elevated by Mr. Day, at the expense of his contemporaries.

J. J. WEATHALL.

EASTBOURNE SANITARY EXHIBITION.

SIR,—A correct list of awards was given in your issue of 3rd Sept. last. The awards consisted of "Certificates of Merit" and "Honourable Mention." In last week's *Builder* a list is printed of awards of silver and bronze medals, but the convertible lists do not correspond. Those who received certificates of merit do not all receive silver medals; and those who received honourable mention do not all receive bronze medals. The explanation is very simple. After the close of the exhibition, a circular was sent round to the exhibitors by an Eastbourne house, asking the exhibitors if they would pay 2*l.* or 2*l.* 2*s.* for a medal. We declined. Hence, our name is present in the first list and absent in the second. So it is with many others.

FREDK. EDWARDS & SON.

*** We have received other letters complaining of this arrangement,—obviously a very objectionable one.

PUBLIC RECORD OFFICE.

SIR,—It is with great regret that I have to inform you that the Public Record Office, Fetter-lane, London, has been, to all intents and purposes, for several days during the past month, entirely useless to the public. When I make this assertion, I am sure you, and thousands of others who read this letter, will be surprised; but your surprise will be increased when I tell you that the cause of the uselessness is the want of artificial light, and that that grievance exists through some extraordinary ideas, which savour much of red-tapeism, for while the public are not allowed a light there, the officials have the use of gas throughout the building to their heart's content.

In all the other Government Offices during the terribly foggy weather, gas, or other artificial light, has enabled the public business to continue without interruption, but at the Public Record Office, through the not very commendable spirit of the powers that be, the public time has been most unjustly wasted. I do not speak thus harshly without cause; and you have, during the past two years, more than once called attention to the grievance.

The grievance is greatly aggravated by reason of the extraordinary system which allows an extensive use of gas throughout the building,—in the officers' rooms, library, and corridors,—and yet withholds a single jet from the search-room, where all the public business is transacted.

A petition, numerously signed by the public, was presented some months ago to the deputy-keeper, asking him to provide some kind of artificial light,—easily done by means of a few yards of pipe and one or two burners, by which gas could be used during the dark days. Without attempting to inquire into the grievance, the reply came that the introduction of a light would cause danger to the records. This reply might have been expected from one of the office clerks, affrighted at the prospect of having to work during the dark days, but it was an insult to the petitioners as coming from the head of the Office. Why? Because the writer, in his hurry to crush the petitioners, forgot discretion,—forgot that the most valuable and priceless records in the country, the Domesday Books and other famous manuscripts,—were daily exposed to danger by the free use of the open fireplaces and gas in the very room in which they are preserved.

The petitioners then, and the public now, only require that the gas should be laid on to the reading-room, so that when the darkness sets in transcribing can still be continued without a break. The public do not expect fresh documents to be produced when it is too dark for the attendants to find them in the strong-rooms. At present, when a fog comes on, we have to sit round the open fireplaces, and tell anecdotes, &c., which is certainly far from creditable employment of time.

There are other grievances at the Public Record Office which the public have a right to see remedied, seeing what an expensive establishment the building has been since the day it was opened; but the question of light is of the first importance, and I do hope, as this appeal will be read by the heads of the Department of the Office of H.M. Works, they will at once inquire into the matter, and thus enable the reader to see during the dark days; for I assert, without fear of contradiction, that there can be no danger in that fireproof-room to the use of gas, which is already in the adjoining officers' rooms, and that if the gas is so very dangerous, why have it in the building at all? and why have it at Somerset House, where more priceless records are preserved,—the wills of those who have died during the space of more than 500 years?

RECORDER.

ANTHRACITE.

SIR,—During the last few weeks I have noticed letters in your issues on the above, and I venture to send you these few lines, thinking some of your readers may be interested in the actual results of the use of anthracite in ordinary grates, and as I do not desire to "create premature prejudices or unfounded fears," I will confine myself, as far as possible, to a brief statement of the results of my experiments, which show:—

1. Its extremely slow combustion, and, therefore, economy.
2. Its smokelessness and cheerful appearance.
3. Its generation of carbonic acid.

I certainly think the first a negative advantage; for it is practically impossible to make a fire with it alone. I have tried it in open range, register, Abbotsford, and Tyndall grates, and find it only possible to have a good fire where anthracite is put on top of ordinary coal well alight. Then, as long as a good fire is kept up, you can continue its use; but once let the fire get low, and recourse must be had to your common coal again. This is, of course, more apparent when used in the slow-combustion stoves mentioned. It fails most in the open range; for the fire must be made up so long before, and lasts so long after it is required, that the kitchen becomes anything but a pleasant place.

Its greater economy, comparative smokelessness, and its cheerful appearance, may be conceded without doubt. As to its unwholesomess,—that it generates more carbonic acid than ordinary coal,—I am certain, in rooms with *good* provision for ventilation (this I found particularly apparent in the kitchen, where necessarily a larger fire was in use). Any one coming into a room with a good anthracite fire alight will perceive it in a moment. That it amounts to danger I do not believe; but that it is very unpleasant I know.

I may add, that it answers admirably in a conservatory fire for heating hot-water pipes. There is, of course, great draught, the fire being outside, and the coals heat quicker and retain their heat longer than coke; and here, again, its smokelessness is of great advantage.

Like your correspondent, "S. R.," I hope to enjoy a "warm room, a cheerful fire, and pure air," and with less smoke, too, and I believe we shall in time. In the meanwhile, I think little harm can be done to the claims of anthracite by a discussion of its qualities by those *fairly* interested in the subject.

A.R.I.B.A.

HEIGHT OF BUILDINGS AND THE BUILDING ACT.

MANSARD ROOF.

THE Army and Navy Hotel, Victoria-street, is now being erected, under the superintendence of Mr. Pilkington, architect, and a question arose upon the Building Act as to the measurement of the height of the building, Mr. Pilkington contending that the wall-head determined the height, while the District Surveyor held that the height was determined by the height of the ceilings. The roof of the hotel is a mansard one, and the height of the building passing the wall-head would be 118 ft., and it, therefore, required the sanction of the Board before being erected if the district surveyor was right in his contention. The matter was submitted to the Building Act Committee of the Board at their last meeting, when it was decided that it was a case in which the Board's sanction should have been obtained, under sec. 56 of 18 & 19 Vic., c. 122, sec. 6 of the Act providing that the "height of every external and party-wall shall be measured from the base of the wall to the level of the top of the topmost story," and that the present building, being over 100 ft., did not come within part 1 of the schedule of the Act, but as the walls were above the thickness required by the Building Act in the cases of walls up to 100 ft., that no action be taken in the matter.

The Jesuit College at Canterbury.—The spacious wing being added to the Jesuit College at Hales-place, near Canterbury, is rapidly proceeding towards completion, and when finished will afford accommodation for a much larger number of students than are now located there. Indeed, in the aggregate, the old and new buildings are arranged to provide residence for 1,000 of the youths exiled with their instructors from France. In celebration of the "top brick" being placed on the additional erection, the fathers of the college have given a dinner to 200 of the *employés* of the contractor, Mr. J. L. Ward, of Manchester.

PROVINCIAL NEWS.

Sedgley.—The tradesmen of Sedgley, in meeting assembled, have decided to erect a public hall for the district, at a cost of 1,200*l.*, the money to be raised by 5*l.* shares. The persons present at the meeting decided to take shares amounting to 400*l.*

Derby.—A movement is on foot for establishing at Derby an Art Gallery in connexion with the Free Library and Museum. The movement owes its origin to a suggestion of Sir Philip Cunliffe Owen. The matter has been brought under the notice of Mr. M. T. Bass, M.P., who, with his accustomed liberality, has asked to be permitted to defray the whole cost of the building, estimated at about 3,000*l.* The site, which adjoins the Free Library, built at the sole cost of Mr. Bass, is to be given by the Mayor of Derby (Mr. Woodiwiss).

Thorne (Lincolnshire).—It has been resolved to provide a new building here for use by the magistrates for petty sessional purposes, by the county court judge, and by the coroner. It is proposed to erect the building by means of joint-stock enterprise, the required capital being 1,000*l.* Mr. Meggitt, builder, of Crowle, has submitted a plan and estimate according to which the outlay required would be about 800*l.*

STAINED GLASS.

Maidstone.—St. Paul's Church, Maidstone, has just received an addition to its painted glass by the insertion of a window to the memory of the late Mrs. Mercer, of Sandling. It is placed in the south aisle, and is from the studio of Mr. Taylor, of Broers-street. The fixing of the window was entrusted to Mr. H. Cruttenden, of Maidstone.

Nottingham.—The Church of St. Andrew, Nottingham, has been adorned by the erection of a series of memorial stained-glass windows and decorations. Messrs. Gibbs & Howard, of London, are the artists. The scheme, as arranged by the Rev. Canon Tebbutt, shows, on the south aisle, the "Parables," and, on the north aisle, the "Miracles," of our Lord. In the chancel two windows have been added, viz., the "Resurrection" and the "Ascension." The chancel ceiling is richly decorated, the frieze representing a choir of twenty-one angels.

Facit (near Rochdale).—The east window of this church is filled with subject work, arranged in bands of colour across the window. The panelling [of ornament is *grisaille* work. The subjects represented are as follow:—At the top of the centre light, Our Lord's Ascension; and underneath, His Crucifixion. The other panels contain, on either side of the Ascension, four figures of the Evangelist; and the two remaining subjects in the side lights are respectively the Agony in the Garden and Maries at the Tomb. The window was designed and executed by Messrs. Heaton, Butler, & Bayne, of Garrick-street, London.

Books.

Report of the City Day-Census, 1881. London: Longmans, Green, & Co.

A SECOND edition of this report has been published by the Local Government Committee of the Corporation, who have added a map showing the various inlets to the City at which the enumeration was taken. The value of the census is undeniable, and some of its results are very suggestive. It is seen that the City stands second of the thirty-nine parishes and districts represented on the Metropolitan Board of Works as regards population, Islington coming first with 282,628; the City of London and Liberties next with 261,061; Lambeth, 253,569; St. Pancras, 236,209; Wandsworth, 210,397; and then follow Camberwell, Hackney, Kensington, Poplar, Marylebone, Greenwich, Bethnal-green, Shoreditch, Fulham, Newington (Surrey), Paddington, Mile-end Old Town, &c. As regards the relative position of the City to some of the leading incorporated cities and towns, in respect of population, with the exception of the cities of Liverpool and Manchester, and the towns of Birmingham, Leeds, and Sheffield, the city of London stands at the head of the incorporated Parliamentary boroughs. With respect to the all-important feature of rateable value, as compared with the thirty-nine parishes and districts of the metropolis the City heads the list by a very considerable amount. The rateable annual

value of the city of London and liberties is 3,535,494*l.*; St. George, Hanover-square, 2,005,358*l.*; St. Mary Abbott, Kensington, 1,969,501; St. Pancras, 1,791,099*l.*; St. Mary, Islington, 1,756,673; St. Marylebone, 1,656,874*l.*; then Lambeth, Wandsworth, Paddington, and Hackney, all about a million and a half; then Camberwell, St. James, Westminster; Greenwich, &c., which are under a million, but considerably above 600,000*l.*; and next follow Chelsea, Fulham, and a long list, under 600,000*l.* It may be further stated that each of the 198 incorporated cities and towns in England and Wales have a less rateable value than the city of London, the rateable value of Liverpool being 3,211,344*l.*; Manchester, 2,296,537; Birmingham, 1,454,329; and Leeds, 1,102,691; these four being the only places with a rateable value above 1,000,000*l.*

Modern Artists. A series of Illustrated Biographies. Edited by F. G. DUMAS. London: Chapman & Hall, Limited, and the British and Foreign Artists' Association, 19, Cockspur-street.

THIS promises to be a very handsome and delightful book. The three parts forming the first section, and now before us, treat of Sir Frederick Leighton, P.R.A., Mr. John Everett Millais, R.A., and Mr. Hubert Herkomer, A.R.A. The remaining sections, which, in like manner, will each contain a group of three subjects, will appear, as nearly as may be possible, at intervals of three months. Mr. Comyns Carr, M. Duranty, Mrs. Mark Pattison, and Mr. Ruskin are to help on the biographical and critical studies; whilst Messrs. Gilbert, Herkomer, Mongin, Rajon, and Waltner will produce the illustrative etchings. Original sketches reproduced in *fac-simile*, portraits of the artists, and views of their homes, form part of the scheme. We shall look at the work critically before long.

VARIORUM.

MR. PETER BARLOW, C.E., has published a little pamphlet, entitled "Experiments and Observations," which prove that by lighting fires at or near the top, under which a plate has been fixed so as entirely to exclude the air, great economy of coal will arise, with better ventilation and other important advantages (Vacher & Sons, *gratis*). It is to be lighted at the top, and he claims that the advantages are such that the Legislature ought to interfere and enforce the arrangement generally. Mr. Barlow appears to be unaware that all this was set forth in our pages many years ago, several times repeated, and that the arrangement, under the title of "The *Builder* Fire," has been widely adopted. It is to be hoped his pamphlet will still further extend the introduction of it.——From the new issue of Cassell's "Old and New London" we get a joke or two out of the notice of the "Bedford" Coffee-house: — "The 'Bedford' was Foote's favourite coffee-house. In 1754, when it was at the height of its fame, Foote would sit there, in his usual corner, a king among the critics and wits, like Addison and Steele at 'Button's.' 'The regular frequenters of the room,' says Mr. John Timbs, 'strove to get admitted to his party at supper; and others got as near as they could to the table, as the only wit flowed from Foote's tongue.' Everybody who knew this celebrated wit came early, in the hope of being one of his party during supper; and those who were not acquaintances had the same curiosity in engaging the boxes near him. Foote, in return, was no niggard in his conversation, but, on the contrary, was as generous as he was affluent. He talked upon most subjects with great knowledge and fluency; and whenever a flash of wit, a joke, or a pun came in his way, he gave it in such a style of genuine humour as was always sure to circulate a laugh, and this laugh was his glory and triumph. Another frequenter of the 'Bedford' was Garrick. One day he was leaving the house with Foote, when the latter let fall a guinea, and exclaimed, as he looked about for it, 'Why, where on earth has it gone to?' 'Gone to the d——l!' replied Garrick, still, however, continuing the search. 'Well said, David,' was the quick and ready answer of Foote; 'let you alone for making a guinea go further than any one else in the world.'"

The late Mr. Samuel Sharpe, the Egyptologist, left ample records of his life and times, and his biography is in course of preparation.

Miscellanea.

Fulham Infirmary and Hospital.—At a meeting of the Fulham Board of Guardians, last week, a letter was read from the Local Government Board stating, with regard to the design "M. D.," which had been sent to them, that the responsibility of selecting plans rested entirely with the Guardians. The Board had resolved to adopt and carry out the design "Experience in a Circle," and they were not prepared to offer any remarks on the plans "M. D.," which they returned. Another communication was received from the Local Government Board containing observations on Messrs. Giles & Gough's design, "Experience in a Circle." The general arrangements appeared to be as, a whole, satisfactory, but there were points in which it might be improved. Several matters were pointed out which would probably receive improvement of detail. The consideration of the letter was adjourned for a fortnight. A letter was read from the Clerk to the Metropolitan Asylum District, stating that the Fulham Small-pox Hospital would be closed from the 27th ult. Mr. Rogers said the Guardians should send a letter to the Local Government Board offering to buy the Hospital. It could be disinfected, and they would have a fine infirmary already built. The Clerk thought they would find the Metropolitan Asylums Board would want about 80,000*l.* for the Hospital. Mr. Rogers considered they might well give 80,000*l.* to get rid of a nuisance.

New County Club for Surrey.—We are informed that the Duke of Northumberland has accepted the presidency of the County Club which has just been established in Guildford in connexion with the "Guildford and County Club Guarantee Company, Limited," with a nominal capital of 3,000*l.*, in 300 shares of 10*l.* each, the number of the original members being 120. The premises selected for the company include the buildings in High-street, which a deputation to the Postmaster-General last autumn pointed out as suitable for Post-office purposes, and which have since been acquired at a large outlay by the Earl of Onslow. Structural alterations are being carried out in the buildings, under the direction of Mr. Ralph Nevill, who has prepared the plans, Mr. C. H. Sparkes, C.E., architect, Guildford, being appointed by the Earl of Onslow to supervise the work on his lordship's behalf. An interesting feature of the alterations will be the formation of a vestibule, leading direct to an ancient staircase of noble proportions, and beautifully made of old Spanish mahogany, inlaid with rosewood, which is being carefully restored.

Harleian Society.—At the annual meeting of the members, held at the Council Room, 140, Wardour-street, on the 27th of January, Dr. George W. Marshall in the chair, the report and balance-sheet were read by the honorary secretary, Mr. George J. Armytage, F.S.A., and showed that the Society was in a very flourishing condition. The number of members on the roll,—namely four hundred,—had been maintained. "The Visitation of Yorkshire in 1564" had been published as the volume for 1881, and the Register Section had published "The Registers of St. Thomas Apostle, London," for the same year. After paying all demands, the Society has a balance of 50*l.* with the bankers, in addition to an investment of 632*l.* Consols. The publications in the press are the second volume of "The Visitation of London in 1633," under the editorship of Dr. Howard and Colonel Chester; and "The Visitation of Cheshire in 1580," by Mr. J. Paul Rylands, F.S.A.; also "The Registers of St. Michael, Cornhill."

The Smoke Abatement Exhibition.—This exhibition is announced to close on Tuesday next, the 14th inst. This, Saturday, afternoon, the 11th inst., at three o'clock, the members of the Royal Institute of British Architects are specially invited to attend. Admission will be by tickets, to be had on application at the offices of the Institute. A number of members of the Architectural Association visited the exhibition on Saturday afternoon last, under the conduct of Mr. T. W. Cutler, who explained the merits of some of the principal exhibits.—— It is announced that the recent visit to the Exhibition of a deputation appointed by the City authorities of Manchester has resulted in a decision to transport the chief exhibits from South Kensington to Manchester, and to open a general exhibition of smoke-preventing appliances there, upon a site offered by the Corporation for the purpose.

The Hours of Labour.—A correspondent writes:—"In these days, when so many expedients are suggested to reduce the cost of manufacture, may I be allowed to make the following proposition,—namely, a change in the working-hours in manufacturing businesses? From my own practical experience I can testify how much time is lost in men getting to work in the morning. Now, my proposal is this:—All men to come in at seven instead of six in the morning, and work on till twelve, thus doing away with the breakfast hour, the afternoon time to remain as now. From the point of view of one who has gone through all details, I am certain this change would be most advantageous to employers and employed. No one who has not served with the men themselves has any idea of the time wasted before breakfast, putting on coats, sharpening tools, and all sorts of pretexts for putting off time, and my practical experience is this,—Do away with the breakfast time altogether, and great economy of working will be the result."

New Theatre, Bournemouth.—A new theatre and opera-house is in course of erection at Bournemouth, from the designs of Messrs. Kemp-Welch & Pinder, of Bournemouth. The site is a well-chosen one, being in the centre of the town, between the Albert and Yelverton roads, and having a frontage to both roads, with good ingress and egress. Accommodation is provided for about 1,000 persons in the auditorium. The stage is roomy, and has good dressing-room accommodation. The dress and upper circles will be entered from Albert-road, and the pit and gallery from Yelverton-road, where is also the stage entrance. The elevations are in the Renaissance style, in red brick, with Beer and Bath stone dressings. Mr. W. Stanley, of Bournemouth, is the builder.

Studentship.—The first competition has taken place for the "Mence Smith Travelling Studentship" of 40*l.*, which was offered by Mr. George Smith, a Liveryman of the Painters' Company, to the West London School of Art, Great Titchfield-street, for the purpose of enabling students to travel abroad. The offer, according to the *City Press*, is made for three years, to be increased under certain conditions to 50*l.*, and the arrangements are left entirely in the hands of the West London School of Art.

Lewes Fine-Art Exhibition.—An exhibition of works of fine-art and native industry will be opened on Monday next, in the County-hall at Lewes, by the Earl of Chichester, the Lord Lieutenant of the county of Sussex. The collection of paintings exhibited includes some rare specimens, known by reputation to art-students, but not often exposed to public view. To connoisseurs of art the exhibition will be found to repay the trouble of a journey from London.

"On awarding Awards."—Under this heading Dr. Hinckes Bird complains that, having sent to the Society of Arts plans, &c., of his house, in reply to their offer of medals for houses showing the best sanitary arrangements, the judges appointed have not inspected them, having confined their visits to a few selected from those submitted. We are not in a position to offer any opinion on the subject,—the less so as the committee have not yet made any report.

The Sportsmen's Exhibition, to which we have alluded, bids fair to be a more brilliant success than could have been anticipated. Exhibitors seem to have fully appreciated the list of patrons, for nearly every inch of space set apart for their exhibits within the huge area of the Agricultural Hall has been applied for and taken. The exhibition was opened on Thursday last.

The Tower of London.—It is stated to have been decided to carry out the proposals for the improvement of the Tower of London by removing the unsightly block of War Office stores which now interferes with the view from the river, and by completing the restoration of the inner line of wall on the site of the storehouses.

TENDERS

For completing four houses, Mortlake Park, for the Prudential Building Society. Mr. W. Moss, architect:—

Ross	£750 0 0
Derby	583 0 0
Hampton	530 0 0
Bar lettt	502 0 0
Mitchell	485 0 0
Baker	485 0 0
Hewlett	305 0 0

For warehouses, St. Mary Overy's Wharf, London Bridge, for Mr. George Doo. Mr. Geo. A. Dunnage, architect. Quantities by Messrs. Linsdell & Giffard:—

Chafen, accepted.

For removing and rebuilding dwelling-house and business premises, in Boleyn-road, Kingsland, for Mr. William Shepherd. Mr. E. A. Lewcock, architect:—

Childs	£2,343	0	0
Larter & Son	2,100	0	0
Harper	1,840	0	0
S. Goodall (accepted)	1,692	0	0
Clark & Holden	1,680	0	0
Capsey	1,660	0	0

For new shop-front, at High-street, Stoke Newington, for Mr. E. Gandy. Mr. H. J. Newton, architect:—

Shurmur	£164	5	0
Sage	155	0	0
Pickersgill Bros.	149	0	0
Simpson	137	0	0
Godden	135	0	0
Wood (accepted)	127	0	0

For decorating, &c., Oxford-place Chapel, Leeds. Mr. James Wilson, architect. Quantities by the architect:—

Decorating.

Gaunt	£319	17	0

New Vestries.

Geo. Thompson	£115	10	6

Lighting.

Geo. Thompson	£60	0	0

For rebuilding Nos. 12 and 13, Nicholas-lane, City. Mr. Charles J. Shoppee, architect. Quantities by Messrs. C. Herbert Shoppee & Sidney Young:—

G. Smith & Co.	£9,480	0	0
W. Brass	8,947	0	0
E. Conder	8,470	0	0
Adamson & Sons	8,280	0	0
Ashby Bros.	8,241	0	0
Stephens & Bastow	8,200	0	0
Macey & Sons	8,147	0	0
Ashby & Horner	8,100	0	0
Clarke & Bracey	7,850	0	0
Langmead & Way	7,830	0	0
E. Lawrance (accepted)	7,644	0	0

For the erection of a house at Crouch End, for Mr. John Smith. Mr. Collcutt, architect:—

Taylor & Parfitt (accepted)	£1,964	0	0

For the erection of a pair of villa-residences at Portslade Drove, on the Aldrington Estate, Brighton, for Mr. W. Benham:—

H. & R. Winn	£1,443	10	0
G. W. Miles	1,429	0	0
G. Kerridge	1,403	7	0
R. Humphreys (accepted)	940	10	0

For first portion of Hospital for Infectious Diseases, Torquay. Mr. Ernest Turner, architect:—

F. W. Vanstone	£3,178	0	0
E. Krauss	3,149	0	0
Hobern	3,141	5	0
Stephens & Bastow	3,020	0	0
Pethick Bros.	2,994	0	0
Tyerman	2,881	0	0
W. A. Goss	2,655	0	0
J. Chubb	2,600	0	0
W. Trevena, Plymouth (accepted)	2,494	0	0

For relief offices, &c., Highbury-mews. Mr. William Smith, architect:—

Goodman	£4,639	0	0
Capsey	4,630	0	0
Stevens Bros.	4,625	0	0
Cole & Chant	4,580	0	0
Brown	4,510	0	0
Staines & Son	4,484	0	0
Hewitt	4,299	0	0
Richardson	4,296	0	0
Dunford & Langham	4,295	0	0
Gentry	4,250	0	0
J. Anley	4,200	0	0
Morton	4,155	0	0
Shurmur	4,095	0	0
Mills	3,990	0	0
Nutts	3,990	0	0
Mattock Bros.	3,989	0	0
J. Harper	3,984	0	0
Angood	3,900	0	0
Garrud	3,883	0	0
Steel Bros.	3,592	0	0
Wood	3,537	0	0

For the erection of St. Paul's Church at Forest Hill. Messrs. E. W. Mountford & H. D. Appleton, architects. Quantities by Mr. Edward Crutchloe:—

Wall Bros.	£7,050	0	0
W. D. & R. Roberts	6,920	0	0
Smith, Kennington (accepted)	6,555	0	0

For alterations, &c., at Board School, Rushmore-road, Hackney, for School Board for London:—

Hobson	£7,664	0	0
Boyce	7,585	0	0
Williams & Son	7,478	0	0
Wall Bros.	7,349	0	0
Oliver	7,345	0	0
Shurmur	7,329	0	0
Sargeant	7,246	0	0
Nightingale	7,243	0	0
Cox	7,021	0	0
Grover	6,939	0	0

For new road, sewer, and surface-water drain, on the Norbury Park Estate, for Messrs. Carter:—

Wilson	£569	0	0
Jackson	555	0	0
Peill & Sons	540	0	0
Harris	519	0	0
Pizzey	500	0	0
Bloomfield (accepted)	472	0	0

For the erection of premises on the site of No. 11, Hoxton-street, Shoreditch. Mr. F. Adams Smith, architect:—

R. Conder	£755	0	0
W. Gibbons & Co.	687	0	0
G. W. Beale	550	0	0
J. Hearle & Son (accepted)	475	0	0

For the erection of dwelling-houses, Old Kent-road. Mr. F. Adams Smith, architect;—

G. W. Beale (accepted)	£2,120	0	0

No competition.

TO CORRESPONDENTS.

Constant Reader (the Building Act contains no definition of a building. Each case has to be separately considered).—An Inquirer (ventilate it properly).—J. C.—T. C. M.—J. J. L.—F. H. B.—R. A. L.—H. J. N.—H. S.—G. P.—T. P.—F. L.—J. C. R.—H. W. H.—W. S.—H. M.—W.—F. F.—E. H.—H. G.—F. A. S.—W. R. M.—S. C.—G. S. & Co.—S. B.—C. J. P.—A. H.—J. W. B.—E. J. M.—J. H.—X.—E. T.—E. J. M.—J. W.—Observer (next week)—W. C. T. (next week)—E. P. (next week).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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